

Safety

LAUNCH COMPLEX SAFETY OPERATING PROCEDURES (LCSOP)

This document contains Western Space and Missile Center (WSMC) safety criteria and safety checklists which are applicable to the conduct and surveillance of hazardous and dangerous missile operations performed under the safety responsibilities of WSMC. It applies to all WSMC organizations, other government agencies, and personnel involved in such operations on Air Force Systems Command launch facilities and associated support facilities on Vandenberg AFB.

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Supersedes WSMCR 127-2, Volume II, 31 May 80. (See signature page for summary of changes).

Number of printed pages: 102

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Editor: Mrs. S. Sutter

Distribution: F; X (see page 5-12 for X Distribution)

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## Chapter 1

## GENERAL INFORMATION

1.1. General Introduction. The Launch Complex Safety Operating Procedures (LCSOP) is an integral part of the WSMC Mishap Prevention Program. Use of a safety checklist, either as an integral part of a task procedure or as a separate document, is mandatory for all hazardous or dangerous missile operations conducted in WSMC facilities. Each WSMC Complex Safety Officer or Technician (CSO/CST) will complete safety checklists when monitoring all dangerous operations and selected hazardous operations. Task supervisors are responsible for ensuring accomplishment of safety checklist items during all other hazardous operations.

1.2. Scope of this Regulation. WSMCR 127-1, Range Safety Requirements, provides the criteria by which hazardous or dangerous missile operations are identified, and describes WSMC Safety criteria which the range user must meet. AFR 127-2/WSMC Sup 1, USAF Mishap Prevention Program, is the WSMC Mishap Prevention Plan and provides important information regarding surveillance of hazardous and dangerous operations by WSMC Safety Office representatives. This regulation provides detailed safety instructions, in checklist format, listing the special safety precautions for hazardous and dangerous operations. It also provides WSMC safety rules and standards which are more stringent or more specific than the requirements published in other Air Force directives.

1.3. Hazardous/Dangerous Operations. WSMC Directorate of Safety (SE) will assure that all missile operations conducted in AFSC facilities which are hazardous or dangerous are identified. All operations so identified (chapters 2 through 5) will be conducted according to 1 STRADR 127-200, Missile Mishap Prevention, WSMCR 127-1, AFR 127-2/WSMC Sup 1 and with the following safety requirements:

1.3.1. A Missile Operations Scheduling Requirements (MOSR) will be initiated and scheduled by the range user for each hazardous or dangerous operation. MOSRs will be prepared according to WSMCR 127-1 and 1 STRADR 80-1, ICBM Operational Test and Evaluation. The MOSR for each operation will be annotated to show those operations for which CSO/CST support is mandatory.

1.3.2. Written procedures for all hazardous or dangerous operations must include safety checklist items. If detailed safety precautions are not contained within the test procedures they must be included in a separate safety checklist. As a minimum the test procedures or safety checklist must include the following:

1.3.2.1. Identification of the operation by title.

1.3.2.2. Boundary of the applicable safety control area (danger area, hazard areas or toxic hazard corridor [THC]).

1.3.2.3. Support required (roadblock guards, fire department, etc.)

1.3.2.4. The time that support is required.

1.3.2.5. Which warning light signal is to be displayed.

1.3.2.6. List of personnel protective equipment required.

1.3.2.7. List of any other special equipment required.

1.3.2.8. Identification of essential personnel (by job title).

1.3.2.9. The following information should also be included if appropriate to the degree of hazard and complexity of the system and work to be done.

1.3.2.9.1. Instructions for briefing and posting support elements.

1.3.2.9.2. A list of appropriate emergency actions.

1.3.2.9.3. Any additional special instructions.

1.3.3. All dangerous operations will be conducted as stated in 1 STRADR 127-200. Rules for dangerous operations include display of RED facility warning light, clearance of all personnel from the danger area (unless located in an approved blockhouse), and the presence of the CSO.

1.3.4. All hazardous operations will be conducted as stated in 1 STRADR 127-200. Rules for hazardous operations include display of a AMBER facility warning light. Those hazardous operations for which a CSO is mandatory are identified in the list of hazardous and dangerous operations in chapters 2 through 5 and the applicable MOSR.

1.3.5. Safety checklists to be used in hazardous or dangerous operations will be as indicated below:

1.3.5.1. Safety checklists provided in chapters 2 through 5 will be used only by WSMC CSOs and CSTs as follows:

1.3.5.1.1. For monitoring scheduled hazardous or dangerous operations at which their presence is mandatory.

1.3.5.1.2. For evaluating task supervisors compliance with safety criteria when spot checking hazardous operations for which the presence of a CSO or CST is not mandatory.

1.3.5.2. Military or contractor personnel performing the task supervisor functions in hazardous operations will use applicable safety checklists as provided here or will develop and provide checklists according to the criteria listed in 1.3. above.

1.4. WSMC/SE Organization. The WSMC Directorate of Safety, Pad and Industrial Safety Division (SEM), is responsible for development and updating of the checklists in chapters 2 through 5. All task supervisor's checklists (when required as stated in 1.3.2. above) will be prepared by the range using agency and approved by WSMC/SEM before use.

1.5. Safety Responsibilities. The safety responsibilities of the task supervisor are as described in 1 STRADR 127-200. WSMC CSO and CST responsibilities are described as follows:

1.5.1. The following responsibilities will be carried out by the CSO in the surveillance of hazardous and dangerous operations:

1.5.1.1. Perform the following actions in all operations for which the presence of a CSO is mandatory:

1.5.1.1.1. Enforce safety criteria.

1.5.1.1.2. Execute the CSO safety checklist.

1.5.1.1.3. Operate the launch complex safety console.

1.5.1.1.4. Execute tasks or provide voice countdown inputs as required by approved written procedures, unless the performance of such task or verbal responses would be in contradiction with 1.5.1.1.5. below.

1.5.1.1.5. Impose a "Hold" on any operation in which the safety of personnel or property will be unduly jeopardized.

1.5.1.1.6. Approve or disapprove launch agency requests for deviation (when the action is in conflict with safety criteria) from established procedures to accomplish an important mission objective or prevent a launch abort.

1.5.1.1.7. Control access to safety control area.

1.5.1.1.8. Control other safety support elements (CST, fire fighting units, ambulance, and security guards) in support of the operation and in response to accidents or mishaps.

1.5.1.1.9. In case of a mishap, execute the CSO/CST emergency actions checklist.

1.5.1.1.10. In launch operations, transmit ground clearance status to the Missile Flight Control Officer (MFCO) and monitor the MFCO communications net during liftoff and early flight.

1.5.1.1.11. Effect all coordination between WSMC Missile Flight Control, range users and the 1 STRAD Launch Support Team (LST).

1.5.1.2. Perform periodic evaluations of hazardous missile operations not requiring the mandatory presence of a CSO in order to evaluate the safety effectiveness of the task supervisor in executing the safety checklist and enforcement of all safety criteria.

1.5.2. The following responsibilities will be carried out by the CST in the surveillance of hazardous and dangerous operations:

1.5.2.1. Perform the following actions during all operations for which the presence of a CST is mandatory:

1.5.2.1.1. Function as a safety team member under the direction of the CSO, on the pad, in the fallback area, or in the blockhouse, as applicable to the system, and according to approved procedures and safety criteria.

1.5.2.1.2. Enforce safety rules and criteria.

1.5.2.1.3. Keep the CSO informed regarding activities in assigned areas. Report immediately any abnormalities or unusual events.

1.5.2.2. Perform, as applicable, the CSO safety surveillance actions when the CSO is not present.

1.6. Pad and Industrial Safety Division. WSMC/SEM will, as stated in AFR 11-4, Host Tenant Support Agreement, provide missile safety surveillance of dangerous and hazardous operations in AFSC launch facilities and launch related support areas.

### 1.7. General Safety Precautions:

1.7.1. WSMC/SEM personnel will monitor all welding or cutting operations performed directly on a missile or on any propellant system hardware.

1.7.2. Use of photographic flash equipment (flashbulbs, strobe lights, etc.) is prohibited within "No Smoking" areas of launch emplacements or solid rocket motor areas, unless specifically authorized by WSMC/SE.

1.7.3. Troubleshooting or emergency action occurring after final pad clearance must be coordinated with the CSO prior to pad reentry.

1.7.4. During hazardous or dangerous operations, the CSO, CST, or task supervisor, as applicable, is responsible for controlling the movement of vehicles, equipment and personnel in or out of established safety control areas. WSMC Form 33, Safety Access List, will be utilized for government personnel and whenever WSMC/SE approved contractor access lists are not provided. During launch operations, the LST Chief, in coordination with the CSO, is responsible for access control through the Missile Flight Hazard Area (MFHA) and Missile Flight Caution Area (MFCA).

1.7.5. Complex personnel will use the "buddy system" when working with equipment involving propellants, high pressure gases, ordnance, cryogenics, high voltages, energized circuits, performing maintenance in elevator shafts, or night work requiring safety belts and life lines.

1.7.6. Personnel working on hazardous electrical equipment will not wear rings, watches, or other metallic objects that could act as conductors of electricity and cause shock or electrocution. These items will be removed before entry into launch facilities when such work is intended. (For the purpose of this rule, hazardous equipment or circuits are defined as those in which noninsulating parts can produce a dangerous shock if energized or any system carrying 600 volts or more whether insulated or not.)

1.7.7. Positive control will be maintained to ensure that individuals are prohibited from carrying flame or spark producing devices (other than authorized tools and equipment) into launch facilities or explosive locations.

1.7.8. The provisions of paragraphs 1.7.6 and 1.7.7 above will be incorporated into checklists for preentry safety briefings given by task supervisors.

### 1.8. Safety Control Areas:

1.8.1. Hazardous and dangerous operations are defined in 1 STRADR 127-200. All operations in WSMC facilities identified as hazardous or dangerous are listed in the system matrix in chapters 2 through 5.

1.8.2. 1 STRAD/SE publishes an individual Launch Support Plan (LSP) for every vehicle launched from VAFB. Each LSP describes and illustrates the MFHA and the MFCA for the respective launch operations. It also lists the facilities affected by, and the restrictions associated with, the MFHA and MFCA.

1.8.3. Hazard areas, danger areas, or THC will be activated before beginning the task for which a safety control area is established.

1.8.4. In the event of a mishap, the CSO, CST, or task supervisor will effect and coordinate emergency actions. Coordination with the LST Chief is required during launch operations. Exception: Launch Contingency Recovery Plan operations will be the specific responsibility of the Commander, 6595th Aerospace Test Group, or a designated representative.

1.8.5. Controlled radiation and no switching requirements will be mandatory whenever explosive ordnance devices are being electrically connected or when shorting caps are removed and the firing line terminals of the Electro Explosive Device (EED) are exposed to Radio Frequency (RF) energy.

1.9. Standard References. Any person, providing safety surveillance for any hazardous or dangerous operation conducted on an AFSC launch complex at VAFB, must have a professional working knowledge of the following standard references:

1.9.1. AFR 127-12, Air Force Occupational Safety and Health Plan.

1.9.2. Applicable Air Force Occupational Safety and Health (AFOSH) Standards.

1.9.3. WSMCR 127-1, Range Safety Requirements.

1.9.4. AFR 127-2, WSMC Sup 1, USAF Mishap Prevention Program.

1.9.5. WSMCR 127-2, Volume II, Launch Complex Safety Operating Procedures (LCSOP).

1.9.6. 1 STRADR 127-200, Missile Mishap Prevention.

1.9.7. VAFBR 92-1, Fire Prevention.

1.9.8. VAFBR 136-1, Storage, Handling and Inspection of Contractor and Tenant Explosives on Vandenberg AFB.

1.9.9. The applicable Launch Complex Safety Plan.

1.9.10. The test procedure being used for the operation.



## Chapter 2

## STORABLE SYSTEMS

2.1. Storable Propellant Missiles. This chapter contains individual safety checklists for hazardous and dangerous operations associated with Titan IIIB and Titan IIID. The two vehicles are similar; therefore, all of the checklists can be used interchangeably on the two systems except where specifically designated for a particular system.

## 2.2. Terms and Abbreviations:

BV	Booster Vehicle
CSO	Complex Safety Officer
CST	Complex Safety Technician
DPL	Dual Propellant Load
GSA	Gas Storage Area
LC	Launch Controller
LN <sub>2</sub>	Liquid Nitrogen
LOB	Launch Operations Building
LSB	Launch Support Building
LST	Launch Support Team
MCA	Missile Flight Caution Area
MHA	Missile Flight Hazard Area
MOS	Missile Operations Support
MRB	Mechanical Road Block
MST	Missile Service Tower
PA	Public Address (System)
PLU	Propellant Loading Unit
PSIG	Per Square Inch Gauge
PTU	Propellant Transfer Unit
R-1	Days Before Launch
RFHCO	Rocket Fuel Handlers Clothing Outfit
RSV	Ready Storage Vessel
SCAPE	Self Contained Atmospheric Protective Ensemble
SPL	Single Propellant Load
SPS	Satellite Propulsion System
SRM	Solid Rocket Motor
SV	Satellite Vehicle
TC	Test Conductor
THC	Toxic Hazard Corridor
TSB	Technical Support Building
UT	Umbilical Tower

- 2.1. Titan R-1 Day Activities and Inspection (CSO/CST).
- 2.1.1. Additional Equipment. None required.
- 2.1.2. Support. None required.
- 2.1.3. Safety Control Area. Not applicable.
- 2.1.4. Action Items:
  - 2.1.4.1. Attend LST briefing and ensure that proper support elements are present and briefed.
  - 2.1.4.2. Attend Prelaunch Countdown Conference.
  - 2.1.4.3. Attend Launch Test Working Group meeting.
  - 2.1.4.4. R-1 Day Inspection. Verify the following:
    - 2.1.4.4.1. Communications system is operational.
    - 2.1.4.4.2. Pad, flame bucket, and storage areas are clean and free from debris.
    - 2.1.4.4.3. All loose or unnecessary objects, trailers, panels, fire extinguishers, and cables are secured or removed from the site.
    - 2.1.4.4.4. High pressure, oxidizer, and fuel areas are free of leaks.
    - 2.1.4.4.5. All emergency showers and eyewashes are operational.
    - 2.1.4.4.6. UT and MST are clean and free of frayed or damaged cables, structural damage, etc.
    - 2.1.4.4.7. Propellant rooms are clean and free of leaks.
    - 2.1.4.4.8. Drain trench is clean and free of obstructions.
    - 2.1.4.4.9. Propellant sampling detectors are operational.
    - 2.1.4.4.10. Water system is operational.

Figure 2-1. Titan R-1 Day Activities and Inspection (CSO/CST).

2.2. Titan Booster Emplacement or Removal (CST).

2.2.1. Additional Equipment. None required.

2.2.2. Support. None required.

2.2.3. Safety Control Area. 150 foot radius.

2.2.4. Action Items. Ensure the following:

2.2.4.1. Stage I vehicle erection is not attempted if the wind speed exceeds 13 knots (10 knots when from 225 degrees clockwise to 020 degrees for T-IIID) at wind tower elevation 54. Stage II erection is not attempted if the wind speed at 30 feet above MST rails is greater than 13 knots, gusts not over 15 knots.

2.2.4.2. Required MST platforms are raised and secured.

2.2.4.3. Safety net is positioned and secured beneath launch mount ring.

2.2.4.4. MST communication system is operational.

2.2.4.5. Agena boom is retracted (West pad).

2.2.4.6. All nonessential personnel are out of the hazard area, and no one is under the load when lifting commences.

2.2.4.7. Approved procedures are used.

CAUTION

HALT THE HOISTING OPERATION IF THE OVERLOAD KLAXON SOUNDS.

2.2.4.8. After Stage I is secured to launch mount, ensure personnel are escorted from hazard area prior to the installation of initial ordnance.

Figure 2-2. Titan Booster Emplacement or Removal (CST).

### 2.3. Titan RSV Loading or Unloading (CST).

#### 2.3.1. Additional Equipment:

2.3.1.1. THC chart.

2.3.1.2. Protective suit, gloves, boots, and eye protection.

2.3.1.3. Canister mask or respiratory protection.

#### 2.3.2. Support:

2.3.2.1. Fire truck on station.

2.3.2.2. Two MOS guards, with radio equipped vehicles and roadblocks.

2.3.3. Safety Control Area. When transferring propellant to ready storage vessel, establish a 200 foot hazard area. This may be reduced to a 50 foot radius hazard area after transfer begins and is progressing normally.

#### WARNING

DO NOT CONDUCT THIS OPERATION DURING HEAVY RAIN OR FOG WHICH RESTRICTS THE VISIBILITY OF OPERATING PERSONNEL. TRANSFER OF PROPELLANT IS LIMITED TO ONE TYPE OF PROPELLANT AT A TIME. MAINTENANCE ON ONE SYSTEM, INVOLVING OPENING LINES OR TANKING, WILL NOT BE CONDUCTED WHILE PROPELLANT IS FLOWING THROUGH ANOTHER SYSTEM.

#### 2.3.4. Action Items. Ensure the following:

2.3.4.1. Weather conditions are GO according to 1 STRADR 127-200 and the THC is plotted.

2.3.4.2. Guards are briefed and posted to isolate the THC.

2.3.4.3. All nonessential personnel are evacuated from the hazard area.

2.3.4.4. Approved acid suits, RFHCO, or SCAPE are used by all personnel in the hazard area.

2.3.4.5. Airline respirators are in use by the operators and emergency breathing equipment is available for all personnel in potentially toxic areas and in the safety control area.

2.3.4.6. All personnel within the hazard area are wearing eye protection devices.

2.3.4.7. Housekeeping is satisfactory.

2.3.4.8. RSV and transporter are checked for leaks.

2.3.4.9. Transporter is grounded and checked.

2.3.4.10. Safety shower and eyewash unit is operational.

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Figure 2-3. Titan RSV Loading or Unloading (CST).

- 2.3.4.11. Status lights are operational.
- 2.3.4.12. Communication systems are operational.
- 2.3.4.13. Facility water hose is functional.
- 2.3.4.14. Approved procedures are used.
- 2.3.4.15. Appropriate PA announcements are made for the operation.

WARNING

CHECK THE DIRECTION OF PLUME DURING FUEL VENTING. IF IT IS BLOWING TOWARD AN INHABITED AREA, STOP THE VENTING OPERATION UNTIL ENDANGERED PERSONS ARE REMOVED OR UNTIL IT IS SAFE TO CONTINUE.

Figure 2-3 (continued). Titan RSV Loading or Unloading (CST).

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2.4. Titan Venting (CST).

2.4.1. Additional Equipment:

2.4.1.1. THC chart.

2.4.1.2. Canister mask or respiratory protection.

2.4.1.3. Goggles or face shield.

2.4.2. Support:

2.4.2.1. Two MOS road guards with radio equipped vehicles and roadblocks.

2.4.2.2. Environmental Health informed.

2.4.2.3. Ambulance on standby at hospital.

2.4.3. Safety Control Area. Predicted THC area.

2.4.4. Action Items. Ensure the following:

2.4.4.1. Weather conditions are GO according to 1 STRADR 127-200 and the THC is plotted.

2.4.4.2. Venting is not started or continued if the following conditions exist:

2.4.4.2.1. Vapors shift from the THC. In such a case the weather forecaster will reevaluate the THC before the venting can continue.

2.4.4.2.2. The THC overlays any portion of a noncontrolled inhabited area.

2.4.4.2.3. Communication capability is not available to personnel in the potentially toxic area.

2.4.4.3. Road guards are briefed and posted.

2.4.4.4. All nonessential personnel are evacuated from the THC.

2.4.4.5. All personnel have proper breathing equipment available.

2.4.4.6. Appropriate PA announcement is made for the operation.

2.4.4.7. Tower and top of pad are cleared of personnel before opening vent if the predicted THC is directed toward MST.

2.4.4.8. A small amount of visible vapor is released to verify that wind direction is as predicted and the toxic plume does not enter intake fan houses.

2.4.4.9. Approved procedures are used.

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Figure 2-4. Titan Venting (CST).

2.5. Titan LN<sub>2</sub> Conversion (CST).

2.5.1. Additional Equipment:

2.5.1.1. Face shield.

2.5.1.2. Ear protection.

2.5.2. Support. None required.

2.5.3. Safety Control Area. Gas Storage Area (GSA).

2.5.4. Action Items. Ensure the following:

2.5.4.1. Area is clear of nonessential personnel.

2.5.4.2. All nonessential vehicles are removed from the hazard area.

2.5.4.3. Signs are posted at LSB south entrance, stairs from pad deck to south side, and all access roads.

2.5.4.4. Appropriate PA announcement is made for the operation.

2.5.4.5. LN<sub>2</sub> AMBER light is on.

2.5.4.6. Personnel are wearing appropriate protective equipment.

2.5.4.7. Approved procedures are used.

Figure 2-5. Titan LN<sub>2</sub> Conversion (CST).

- 
- 2.6. Titan LN<sub>2</sub> Transfer (CST).
  - 2.6.1. Additional Equipment:
    - 2.6.1.1. Face shield.
    - 2.6.1.2. Ear protection.
  - 2.6.2. Support. None required.
  - 2.6.3. Safety Control Area. 50 feet (Gas Storage Area).
  - 2.6.4. Action Items. Ensure the following:
    - 2.6.4.1. Appropriate PA announcement is made for the operation.
    - 2.6.4.2. All essential personnel are wearing approved protective equipment: gloves, boots, apron, and eye protection.
    - 2.6.4.3. Self-contained breathing apparatus is available.
    - 2.6.4.4. GSA AMBER light is on.
    - 2.6.4.5. Approved procedures are used.
- 

Figure 2-6. Titan LN<sub>2</sub> Transfer (CST).



2.7. Titan Mechanical Ordnance Installation or Removal (Booster Empty) (CST).

2.7.1. Additional Equipment:

2.7.1.1. Safety goggles or approved eye protection.

2.7.2. Support. None required.

2.7.3. Safety Control Area. MST, UT, and pad deck.

WARNING

DO NOT CONDUCT THIS OPERATION WHEN ELECTRICAL STORMS ARE IN THE AREA.

2.7.4. Action Items. Ensure the following:

2.7.4.1. Appropriate PA announcement is made for the operation.

2.7.4.2. Pad status light is AMBER.

2.7.4.3. Nonessential personnel have cleared the hazard area.

2.7.4.4. Approved procedures are used.

2.7.4.5. All watches, bracelets, and rings are removed when handling ordnance.

2.7.4.6. Appropriate ordnance placards are displayed at access road.

2.7.4.7. Personnel handling ordnance are wearing nonstatic clothing.

2.7.4.8. Personnel handling exposed ordnance items are continuously grounded.

2.7.5. Give TC clearance to proceed.

Figure 2-7. Titan Mechanical Ordnance Installation or Removal with Booster Empty (CST).

2.8. Titan Destruct Ordnance Installation, Connection or Checkout (Booster Loaded) (CST).

2.8.1. Additional Equipment:

2.8.1.1. Goggles or approved eye protection

2.8.1.2. Grounding devices.

2.8.1.3. THC chart.

2.8.2. Support:

2.8.2.1. Ambulance and medical technician on standby at hospital.

2.8.2.2. Fire truck on station.

2.8.2.3. Two MOS guards with radio equipped vehicles and roadblocks.

2.8.3. Safety Control Area. 1200 foot radius.

WARNING

DO NOT CONDUCT THIS OPERATION WHEN ELECTRICAL STORMS ARE IN THE AREA.

2.8.4. Action Items. Ensure the following:

2.8.4.1. Brief support team and verify that they have canister masks in their possession.

2.8.4.2. Post fire support at LOB entrance.

2.8.4.3. Post two roadblocks on Surf Road for West pad operations.

2.8.4.4. Lower 1200 foot gate, brief guard and guard supervisor.

2.8.4.5. All watches, bracelets, and rings are removed when handling ordnance connectors.

2.8.4.5.1. Emergency breathing equipment is available for all personnel in the THC and hazard area.

2.8.4.5.2. Pad housekeeping is adequate.

2.8.4.5.3. Communication system is operational.

2.8.4.5.4. MST and UT from level 119 down, on West pad, are inspected.

2.8.4.5.5. MST and UT from level 11 down, on East pad, are inspected.

2.8.4.5.6. Facility water hose is in place.

2.8.4.5.7. All personnel handling exposed ordnance items are continuously grounded.

Figure 2-8. Titan Destruct Ordnance Installation, Connection, or Checkout (Booster Loaded)(CST).

- 2.8.4.5.8. All personnel involved in ordnance operations are wearing nonstatic producing clothing and eye protection.
- 2.8.4.5.9. All nonessential personnel are clear of hazard area.
- 2.8.4.5.10. Approved procedures are used.
- 2.8.4.5.11. Weather conditions are GO according to 1 STRADR 127-200 and the THC is plotted.
- 2.8.4.6. Advise CSO when the area is clear for ordnance operation.
- 2.8.4.7. After ordnance operation is complete, inspect complex for hazardous conditions and advise CSO of pad status.
- 2.8.5. Malfunction, Hold, or Abort:
  - 2.8.5.1. Advise CSO of malfunction.
  - 2.8.5.2. Advise CSO when malfunction is corrected and area is clear.
  - 2.8.5.3. If abort is final:
    - 2.8.5.3.1. Advise CSO when the system is in safe condition.
    - 2.8.5.3.2. Advise CSO when the pad is safe for normal operations.

Figure 2-8 (continued). Destruct Ordnance Installation, Connection, or Checkout (Booster Loaded) (CST).

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2.9. Titan Ordnance Installation, Connection, or Checkout (Booster Loaded) (CSO).

2.9.1. Additional Equipment. As required for ordnance operations

2.9.2. Support. As required for ordnance operations

2.9.3. Safety Control Area. 1200 foot radius.

WARNING

DO NOT CONDUCT THIS OPERATION WHEN ELECTRICAL STORMS ARE IN THE AREA.

2.9.4. Action Items. Ensure the following:

2.9.4.1. CST briefs and posts support.

2.9.4.2. Weather conditions are GO according to 1 STRADR 127-200 and the THC is plotted.

2.9.4.3. Pad status light is AMBER.

2.9.4.4. Control radiation is in effect.

2.9.4.5. PA announcement is made stating that all nonessential personnel must clear the hazard area.

2.9.4.6. Nonessential personnel have cleared the hazard area.

2.9.4.7. All personnel in the THC have emergency breathing equipment available.

2.9.4.8. Verify access lists of essential personnel with the TC.

2.9.5. Malfunction, Hold, or Abort:

2.9.5.1. Hold support in position.

2.9.5.2. Clear personnel to pad for troubleshooting.

2.9.5.3. When malfunction is corrected and countdown is to continue, report area clear.

2.9.5.4. If abort is final:

2.9.5.4.1. Ensure system is in safe condition.

2.9.5.4.2. Clear CST to pad for inspection.

2.9.5.4.3. When CST reports that the pad is safe, inform Air Force Launch Controller that the pad is safe for normal operation.

---

Figure 2-9. Ordnance Installation, Connection, or Checkout (Booster Loaded) (CSO).

2.10. Titan IIID Solid Rocket Motor Build-Up or Removal (CST).

2.10.1. Additional Equipment. None required.

2.10.2. Support. None Required.

2.10.3. Safety Control Area. U1, MST and pad deck.

2.10.4. Action Items. Ensure the following:

2.10.4.1. All flame producing devices are deposited at 1200 foot gate.

2.10.4.2. Only essential personnel are present in hazard area.

2.10.4.3. Appropriate placards are displayed at 1200 foot guard post and MST.

2.10.4.4. Pad is clear of combustible material and spark producing devices.

2.10.4.5. Approved lifting equipment is used.

2.10.4.6. Required MST platforms are raised and secured.

2.10.4.7. Safety net is positioned and secured beneath launch mount ring.

2.10.4.8. MST communication system is operational.

2.10.4.9. Pad condition is AMBER.

2.10.4.10. Approved procedures are used.

2.10.4.11. Weather conditions are GO.

2.10.4.12. All vehicles used for solid rocket motor handling, assembly, and on the pad deck have an approved spark arrestor exhaust system.

Figure 2-10. Titan IIID Solid Rocket Motor Buildup or Removal (CST).

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2.11. Titan PTU Loading or Unloading (UDMH/IRFNA) (CST).

2.11.1. Additional Equipment:

2.11.1.1. Full protective suit, gloves, boots, hood and eye protection.

2.11.1.2. Canister mask or air line respirator when required.

2.11.1.3. THC chart.

2.11.2. Support:

2.11.2.1. Ambulance and medical technician on standby at hospital.

2.11.2.2. Fire truck on station at the pad.

2.11.2.3. Two MOS guards with radio equipped vehicles.

2.11.3. Safety Control Area. 50 feet (South side of LSB)

WARNING

TRANSFER OF PROPELLANTS IS LIMITED TO ONE TYPE OF PROPELLANT AT A TIME. MAINTENANCE ON ONE SYSTEM, INVOLVING OPENING LINES OR TANKING, WILL NOT BE CONDUCTED WHILE PROPELLANT IS FLOWING THROUGH ANOTHER SYSTEM. THIS OPERATION WILL NOT BE CONDUCTED DURING HEAVY RAIN OR DURING AN ELECTRICAL STORM WITHIN A 10-MILE RADIUS OF THE COMPLEX

2.11.4. Action Items. Ensure the following:

2.11.4.1. Acid suits and canister masks are available for all personnel in the hazard area.

2.11.4.2. Housekeeping is satisfactory.

2.11.4.3. There are no leaks in the PTU or transporter.

2.11.4.4. Showers and eyewash facilities are operational.

2.11.4.5. Pad status light is AMBER.

2.11.4.6. Communication system is operational.

2.11.4.7. All nonessential personnel are evacuated from the hazard area. Entrance to southside of pad, and from the pad deck, are placarded.

2.11.4.8. Approved procedures are used.

2.11.4.9. Operating personnel are wearing full protective splash suits and air line respirators when propellants are transferred/sampled or opening wetted lines.

2.11.4.10. Weather conditions are GO and the THC is plotted.

---

Figure 2-11. Titan PTU Loading or Unloading (UDMH/IRFNA) (CST).

2.12. Titan Space Vehicle System Tanking (CST).

2.12.1. Additional Equipment:

2.12.1.1. Full protective suits, boots, and gloves.

2.12.1.2. Full face shield.

2.12.1.3. Canister mask.

2.12.1.4. THC chart.

2.12.2. Support:

2.12.2.1. Ambulance and medical technician on standby at hospital.

2.12.2.2. Fire truck on station.

2.12.2.3. Two MOS guards with radio equipped vehicles.

2.12.3. Safety Control Areas. 1200 foot radius.

WARNING

DO NOT CONDUCT THIS OPERATION DURING AN ELECTRICAL STORM.

2.12.4. Action Items. Ensure the following:

2.12.4.1. Verify weather conditions are GO according to 1 STRADR 127-200 and the THC is plotted.

2.12.4.2. Brief support team and verify that they have canister masks in their possession.

2.12.4.3. Post roadblocks to isolate the THC.

2.12.4.4. Brief guard post at 1200 foot roadblock and lower gate.

2.12.4.5. Post fire support at IOB entrance

2.12.4.6. Pad status light is AMBER.

2.12.4.7. All MST tanking crew personnel and all personnel in propellant rooms are wearing acid suits, boots, gloves, hood, and respiratory protection or have air packs immediately available.

2.12.4.8. Eye protection and full protective equipment are worn by all personnel in hazard area.

2.12.4.9. Shower and eyewash are operational.

2.12.4.10. Housekeeping in MST, UT, and propellant storage room is adequate.

Figure 2-12. Titan Space Vehicle System Tanking (CST).

- 
- 2.12.4.11. Facility water hose is in position.
  - 2.12.4.12. All nonessential personnel are cleared from hazard area.
  - 2.12.5. Give Launch Controller clearance to proceed.
  - 2.12.6. Malfunction, Hold or Abort:
    - 2.12.6.1. Hold support in position.
    - 2.12.6.2. Clear personnel to pad for trouble shooting.
    - 2.12.6.3. When malfunction is corrected and countdown is to continue, advise CSO of status.
    - 2.12.6.4. If abort is final:
      - 2.12.6.4.1. Ensure system is in safe condition.
      - 2.12.6.4.2. Make pad inspection.
      - 2.12.6.4.3. Advise the CSO that the pad is safe for normal operations.
- 

Figure 2-12 (continued). Titan Space Vehicle System Tanking (CST).



2.13. Titan SPL, DPL, and Pressurization (CSO).

2.13.1. Additional Equipment. THC chart and load procedures.

2.13.2. Support. Fire truck, crew, and two MOS guards with radio equipped vehicles on station.

2.13.3. Safety Control Area. 1200 foot radius.

WARNING

DO NOT CONDUCT THIS OPERATION DURING ELECTRICAL STORMS. TRANSFER OF PROPELLANTS IS LIMITED TO ONE TYPE OF PROPELLANT AT A TIME. MAINTENANCE ON ONE SYSTEM, INVOLVING OPENING LINES OR TANKING, WILL NOT BE CONDUCTED WHILE PROPELLANT IS FLOWING THROUGH ANOTHER SYSTEM.

2.13.4. Action Items. Ensure the following:

2.13.4.1. Communication system is operational.

2.13.4.2. Visual warning lights are operational.

2.13.4.3. Weather conditions are GO according to 1 STRADR 127-200 and the THC is plotted.

2.13.4.4. Pad status light is on AMBER.

2.13.4.5. PA announcement is made stating that all nonessential personnel will clear the 1200 foot hazard area.

2.13.4.6. Necessary support is on station, access control is established through 1200 gate guard and Surf roadblocks are in place.

2.13.4.7. Area is clear of nonessential personnel.

2.13.4.8. Badge count is obtained from 1200 foot gate guard.

2.13.4.9. Hospital direct line is operational, ambulance and technician on standby.

2.13.4.10. Launch Controller receives clearance to proceed with operation.

2.13.4.11. TC notifies CSO of intent to vent. (If predicted plume is directly toward MST, clear tower and top of pad before opening vent).

2.13.4.12. TC notifies the CSO how many people are on the inspection team.

2.13.4.13. Spills have been washed down.

Figure 2-13. Titan SPL, DPL, and Pressurization (CSO).

---

2.13.5. Malfunction, Hold, or Abort:

2.13.5.1. Hold support in position.

2.13.5.2. Clear personnel to pad for trouble shooting.

2.13.5.3. When malfunction is corrected, ensure area is clear and notify TC when it is clear to proceed.

2.13.5.4. If abort is final:

2.13.5.4.1. Verify system is safe.

2.13.5.4.2. Clear CST to pad for inspection.

2.13.5.4.3. When CST reports pad is safe, notify Launch Controller that normal operation can continue.

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Figure 2-13 (continued). Titan SPL, DPL, and Pressurization (CSO).

2.14. Titan SPL, DPL, and Pressurization (CST).2.14.1. Additional Equipment:

2.14.1.1. Full protective suit, gloves, boots, and eye protection.

2.14.1.2. Canister mask.

2.14.2. Support:

2.14.2.1. Ambulance and medical technician on standby at hospital.

2.14.2.2. Fire truck on station.

2.14.2.3. Two MOS guards with radio equipped vehicles and roadblocks.

2.14.3. Safety Control Area. 1200 foot radius for DPL and pressurization, 400 foot radius for SPL.

## WARNING

DO NOT CONDUCT THIS OPERATION WHEN AN ELECTRICAL STORM IS IN THE AREA. TRANSFER OF PROPELLANTS IS LIMITED TO ONE TYPE OF PROPELLANT AT A TIME. MAINTENANCE ON A SYSTEM, INVOLVING OPENING LINES OR TANKING, WILL NOT BE CONDUCTED WHILE PROPELLANT IS FLOWING THROUGH ANOTHER SYSTEM.

2.14.4. Action Items. Ensure the following:

2.14.4.1. Brief support team and verify that they have canister masks in their possession.

2.14.4.2. Close gates on Surf Road for DPL and pressurization operations.

2.14.4.3. Lower gate at applicable pad entrance and place roadblocks to isolate the THC.

2.14.4.4. Post fire support at LOB entrance.

2.14.4.5. Personnel outside the LSB area and inside the hazard area are wearing full protective clothing and eye protection.

2.14.4.6. Emergency breathing equipment is available for all personnel in potentially toxic and hazard areas.

2.14.4.7. Housekeeping is adequate.

2.14.4.8. There are no leaks in RSVs.

2.14.4.9. Showers and eyewash are operational.

Figure 2-14. Titan SPL, DPL, and Pressurization (CST).

- 2.14.4.10. Pad status lights are AMBER.
  - 2.14.4.11. Communication system is operational.
  - 2.14.4.12. Facility water hose is in place.
  - 2.14.4.13. Notify CSO of pad condition.
  - 2.14.4.14. Clear all nonessential personnel from hazard area. Lower 1200 foot guard gate for DPL and pressurization.
  - 2.14.4.15. Advise CSO when the area is clear for tanking or detanking operations.
  - 2.14.4.16. Allow the pad chief and essential personnel to remain topside; all others must clear top of pad during propellant flow. (No one allowed outside LSB during pressurization.)
  - 2.14.4.17. Clear personnel topside for leak check inspection.
  - 2.14.4.18. Ensure all personnel except pad chief and leak check crew are evacuated from hazard area.
  - 2.14.4.19. Check direction of plume during venting. If it is blowing toward inhabited area, stop the venting operation until the endangered persons are removed or until it is safe to continue.
  - 2.14.4.20. After tanking or detanking, inspect pad for hazardous condition and advise CSO of pad status.
  - 2.14.5. Malfunction, Hold, or Abort:
    - 2.14.5.1. Advise CSO of malfunction.
    - 2.14.5.2. Advise CSO when malfunction is corrected and when it is clear and safe to continue.
    - 2.14.5.3. If abort is final:
      - 2.14.5.3.1. Advise CSO when the system is in safe condition.
      - 2.14.5.3.2. Advise CSO when the pad is safe for normal operations.
- 

Figure 2-14 (continued). Titan SPL, DPL and Pressurization (CST).

## 2.15. Titan Launch (CST).

### 2.15.1. Additional Equipment:

2.15.1.1. Full protective suit, gloves, boots, and eye protection.

2.15.1.2. Canister mask.

2.15.1.3. Countdown manual.

### 2.15.2. Support:

2.15.2.1. Ambulance and medical technician on standby at hospital; direct line is operational.

2.15.2.2. Fire truck on station.

2.15.2.3. Two MOS guards with radio equipped vehicles.

2.15.3. Safety Control Area. MFCA and MFHA

2.15.4. Action Items. Ensure the following:

2.15.4.1. Discrepancies found during R-1 day inspection have been corrected.

2.15.4.2. The following areas have been inspected:

2.15.4.2.1. MST and UT.

2.15.4.2.2. Payload vehicle propellant storage area.

2.15.4.2.3. RSVs.

2.15.4.2.4. SCAPE suit room.

2.15.4.3. Pad status lights are operational.

2.15.4.4. Communication system is operational.

2.15.4.5. Facility water hose is in position.

2.15.4.6. Support team is briefed and have emergency breathing equipment in their possession.

NOTE: The CSO must approve trouble shooting or emergency actions after final pad clearance.

2.15.5. Vehicle Vent Removal. Ensure the following:

2.15.5.1. Nonessential personnel are cleared from levels 49, 79, 99, and 109 of the West pad and from the appropriate levels of the East pad.

2.15.5.2. Personnel performing vent removal are wearing acid suits, gloves, boots, and have emergency breathing equipment.

Figure 2-15. Titan Launch (CST).

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2.15.6. Satellite Vehicle Arming:

- 2.15.6.1. Obtain from the payload officer the number of personnel above level 119 on the West pad and above level 11 on the East pad.
- 2.15.6.2. Advise CSO of the total number of personnel on the pad during the operation.
- 2.15.6.3. Open area to normal access after completion of arming task.

2.15.7. Agona Tanking. West Pad:

- 2.15.7.1. Ensure all personnel have been cleared from the danger area.
- 2.15.7.2. Advise CSO when the area is clear for 10% tanking.
- 2.15.7.3. When CSO verifies 10% tanking is complete, escort essential personnel from pad for final launch preparations.
- 2.15.8. After preparation, clear both pads of all personnel and lower gate to pad where operation is not being conducted. Gates to pad where operation is being conducted will remain up and the main gate will be left open.

2.15.9. Advise CSO when Danger area is clear.

2.15.10. Have MOS and guard supervisor start final clearance of personnel from autos, trailers, TSBS, and guard posts.

2.15.11. Post guard at blockhouse entrance; allow no one to exit.

2.15.12. Advise CSO when area is secure.

2.15.13. Close blockhouse door (T-40)

2.15.14. Ensure safety team has full protective suits and canister masks.

2.15.15. Count personnel in LOB and report count to CSO.

2.15.16. Ensure a guard is posted at launch control center door for CSO instructions.

2.15.17. Normal Post-launch:

2.15.17.1. Hold all personnel in blockhouse until CSO gives clearance. Hold all personnel on site until all necessary elements of LST are on site for launch pad safing.

2.15.17.2. Ensure the 1200 foot gate guard allows only those persons for whom he has safety badges on the pad.

2.15.17.3. Ensure the 1200 foot gate guard is first out of the LOB posts himself immediately and clears LST to pad.

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Figure 2-15 (continued). Titan Launch (CST).

2.15.18. Malfunction, Hold, or Abort:

2.15.18.1. Advise CSO of malfunction.

2.15.18.2. Advise CSO when malfunction is corrected and area is clear.

2.15.18.3. If abort is final:

2.15.18.3.1. Advise CSO when the system is in safe condition.

2.15.18.3.2. Advise CSO when the pad is safe for normal operations.

Figure 2-15 (continued). Titan Launch (CST).

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2.16. Titan Launch (CSO).

2.16.1. Additional Equipment. THC chart and countdown manual.

2.16.2. Support. Fire Truck and MOS, with vehicles, on station. Ambulance on standby at hospital.

2.16.3. Safety Control Area. MFHA and MFCA.

2.16.4. Action Items. Ensure the following:

2.16.4.1. Communication channels are operational.

2.16.4.2. Status and alert lights are operational and the MFCO's console is displaying AMBER.

2.16.4.3. Pad status lights are AMBER.

2.16.4.4. Weather conditions are GO according to 1 STRADR 127-200 and the THC is plotted.

2.16.4.5. Controlled radiation period is in effect.

2.16.4.6. Necessary support elements are on station, properly equipped, and briefed.

2.16.4.7. LOB guards are properly positioned.

2.16.4.8. PA announcement is made instructing all nonessential personnel to clear the 1200 foot hazard area.

2.16.4.9. Area is clear of all nonessential personnel and vehicles.

2.16.4.10. Controlled radiation period is ended after completion of arming tasks.

2.16.4.11. Necessary personnel are cleared to the pad to prepare missile for flight configuration.

2.16.4.12. PA announcement is made instructing all personnel to clear the 1200 foot hazard area required for 10% tanking (West pad).

2.16.4.13. Klaxon horn is activated and pad status lights are switched to RED (for 10% tanking).

2.16.4.14. Danger area is clear of all personnel.

NOTE: CSO must approve trouble shooting or emergency actions after final pad clearance.

2.16.4.15. LSF is on station at fallback area.

2.16.4.16. Pad status light is switched to AMBER at completion of 10% tanking operation.

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Figure 2-16. Titan Launch (CSO).



- 2.16.4.17. CST and propellant crew are cleared to pad for leak check.
- 2.16.4.18. No switching period is initiated.
- 2.16.4.19. PA announcement is made instructing all nonessential personnel to clear the 5000 foot Danger area and all essential personnel to report to the fallback area or the LOB.
- 2.16.4.20. Klaxon horn is activated and pad status lights are switched to RED.
- 2.16.4.21. All personnel are clear of the Danger area.
- 2.16.4.22. MPHA and MFCA are activated.
- 2.16.4.23. Hazard and caution corridors are clear for launch. Close LOB doors and receive personnel count from CST.
- 2.16.4.24. Switch status and alert lights to GREEN and notify MFCO that the area is clear for launch.
- 2.16.4.25. At T-30 seconds, join and monitor the MFCO net.
- 2.16.4.26. Inform LST of pad status and post-launch instructions.
- 2.16.4.27. Send guard to pad gate to establish roadblock after missile has programmed.
- 2.16.4.28. Clear LST Chief, Fire Chief, and one fire truck to pad.
- 2.16.4.29. After clearance is received from CST, brief guard and clear required support elements to pad.
- 2.16.4.30. Release roadblocks.
- 2.16.5. Malfunction, Hold, or Abort:
  - 2.16.5.1. Ensure the following.
    - 2.16.5.1.1. Support is held in position.
    - 2.16.5.1.2. Essential personnel are cleared to pad for trouble shooting.
  - 2.16.5.2. If abort is final:
    - 2.16.5.2.1. Ensure system is in safe condition.
    - 2.16.5.2.2. Clear launch recovery crews to pad.
    - 2.16.5.2.3. Inform LC, after confirmation is received from CST, that the pad is clear for normal operations. Maintain controlled access to pad.

Figure 2-16 (continued). Titan Launch (CSO).

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2.17. Agena or Payload Mating (Titan Loaded).

2.17.1. Additional Equipment:

2.17.1.1. Canister mask.

2.17.1.2. Procedures.

2.17.2. Support:

2.17.2.1. Fire truck on station.

2.17.2.2. Ambulance and medical technician on standby at hospital; direct line is operational.

2.17.2.3. Three MOS guards; one vehicle with radio and MRBs.

2.17.3. Safety Control Area. 1200 foot radius.

WARNING

DO NOT CONDUCT THIS OPERATION WHEN AN ELECTRICAL STORM IS IN THE AREA.

2.17.4. Action Items. Ensure the following:

2.17.4.1. Brief support team and verify they have breathing equipment available.

2.17.4.2. Gates closed on Surf Road.

2.17.4.3. Mating team only will be authorized in the control area.

2.17.4.4. Toxic hazard area will be predicted on a wetted surface of 3400 square feet.

2.17.4.5. No moving vehicles permitted in the hazard area.

2.17.4.6. Canister mask will be within reach.

2.17.4.7. Pad status light is AMBER.

2.17.4.8. Showers and eyewash are operational.

2.17.4.9. Communication system is operational.

2.17.4.10. Facility hoses are on both sides of pad.

2.17.4.11. THC is activated and current.

2.17.4.12. Approved procedures are used.

2.17.4.13. PA announcements are made.

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Figure 2-17. Agena or Payload Mating (Titan Loaded).

**2.18. Welding.**

2.18.1. Additional Equipment. None required.

2.18.2. Support. As required.

2.18.3. Safety Control Area. Appropriate to the type of operation and the system involved in the operation.

2.18.4. Action Items. Ensure the following:

2.18.4.1. Fire department has issued an AF Form 592, Permit for Cutting and Welding.

2.18.4.2. All flammable solvents and combustible materials are removed from the general area.

2.18.4.3. Propellant lines or tanks are purged with inert gas, where appropriate.

2.18.4.4. All nonessential personnel are evacuated from the area; PA announcement made (if appropriate).

2.18.4.5. Molten metal resultant from the welding operation is contained in a manner that precludes possible ignition of material or flammables.

2.18.4.6. Electric welders are grounded.

2.18.4.7. Safety goggles, shields, etc., in use.

2.18.4.8. Pad status lights to AMBER (if appropriate).

Figure 2-18. Welding.

**2.19. Personnel Tank Entry (CST).**

2.19.1. Additional Equipment. T.O. 00-25-235, Safety Procedures and Equipment in Confined Spaces.

2.19.2. Support. Bioenvironmental engineer.

2.19.3. Safety Control Area. Tank or confined space.

2.19.4. Action Items. Ensure the following:

2.19.4.1. All safety equipment required is inspected for serviceability.

2.19.4.2. That the Bioenvironmental engineer has certified the tank safe for entry.

2.19.4.3. Procedures to be used meet Air Force standards.

Figure 2-19. Personnel Tank Entry (CST).

---

2.20. Satellite Vehicle (SV) Pneumatic Load (Tanked).

2.20.1. Additional Equipment:

2.20.1.1. THC chart

2.20.1.2. Test procedure

2.20.2. Support:

2.20.2.1. Two MOS guards with radio equipped vehicles and MRBs.

2.20.2.2. Fire truck on station.

2.20.3. Safety Control Area: 1200 foot radius.

2.20.4. Action Items. Ensure the following:

2.20.4.1. Obtain the THC from operations center.

2.20.4.2. Brief support personnel on operation.

2.20.4.3. Instruct MOS to sweep all areas in the THC and to set up MRBs as required.

2.20.4.4. Position fire department by LOB.

2.20.4.5. Monitor operation from safety console in LOB.

2.20.4.6. Brief guards on operation and instruct them to lower gate at the start of operation.

2.20.4.7. Give "SAFETY GO" to Air Force Launch Controller when MOS reports area clear, MST guards are removed, and when pad area has been cleared.

2.20.4.8. During operation, keep the THC updated and inform Air Force Launch Controller of any changes.

---

Figure 2-20. Satellite Vehicle (SV) Pneumatic Load (Tanked).

---

2.21. X-Ray.

2.21.1. Additional Equipment. Two Victoreen survey meters or equivalent.

2.21.2. Support. Bioenvironmental engineer or technician.

2.21.3. Safety Control Area. To be determined by Bioenvironmental engineer or technician.

2.21.4. Action Items. Assist the Bioenvironmental engineer or technician in establishing a safety control area and keeping personnel off the pad deck, or out of the control area, where the operation will be conducted.

---

Figure 2-21. X-Ray.

<u>TANK USAGE</u>		<u>MAXIMUM OPERATING PRESSURE</u>	<u>PROOF PRESSURE</u>	<u>25% OF DESIGNED BURST CLEAR</u>	<u>50% OF DESIGNED BURST CLEAR</u>
Stage 0(SRM)	Thrust Vector Control	1109	1670	550.2	1100.3
Stage I	Hydraulic Accumulator	3200	4500	2675	5350
	Fuel Tank 23D	13.8	56.1	14.7	29.4
	Oxidizer Tank 23D	25.8	89.2	22.0	44.0
Stage II	Hydraulic Accumulator	3300	4500	2675	5350
	Fuel Tank 23D	38.3	72.1	22.0	44.0
	Oxidizer Tank 23D	36.3	80.5	22.8	45.6
Stage III (Agena)	Fuel Tank	40	69	17.25	34.5
	Oxidizer Tank	32	69	17.25	34.5
	Helium Sphere	4000	4800	1500	3000
	Guidance Gas	3600	4320	1350	2700
	Nitrogen Tank (Fast Shutdown)	1500	2250	750	1500
SPS	Helium Sphere	4200	6300	1550	3000
	RCS Tank	200	525	175	200
SV	OAS Tank	300	450	150	300
	RCS Tank	350	525	175	350
	LBI Spheres	3000	4500	1500	3000
SC	Hydrazine Tank	350	525	175	350
AGE (East Pad)	Oxidizer GN <sub>2</sub> Storage	5500			
	Fuel GN <sub>2</sub> Storage	2800			
	Satellite Vehicle Sys	5000			
	GN <sub>2</sub> Storage				
AGE (West Pad)	Oxidizer GN 2 Storage	2500			
	Fuel GN <sub>2</sub> Storage	4400			

\*ALL PRESSURES ARE PSIG

Figure 2-22. Pressure Vessels.

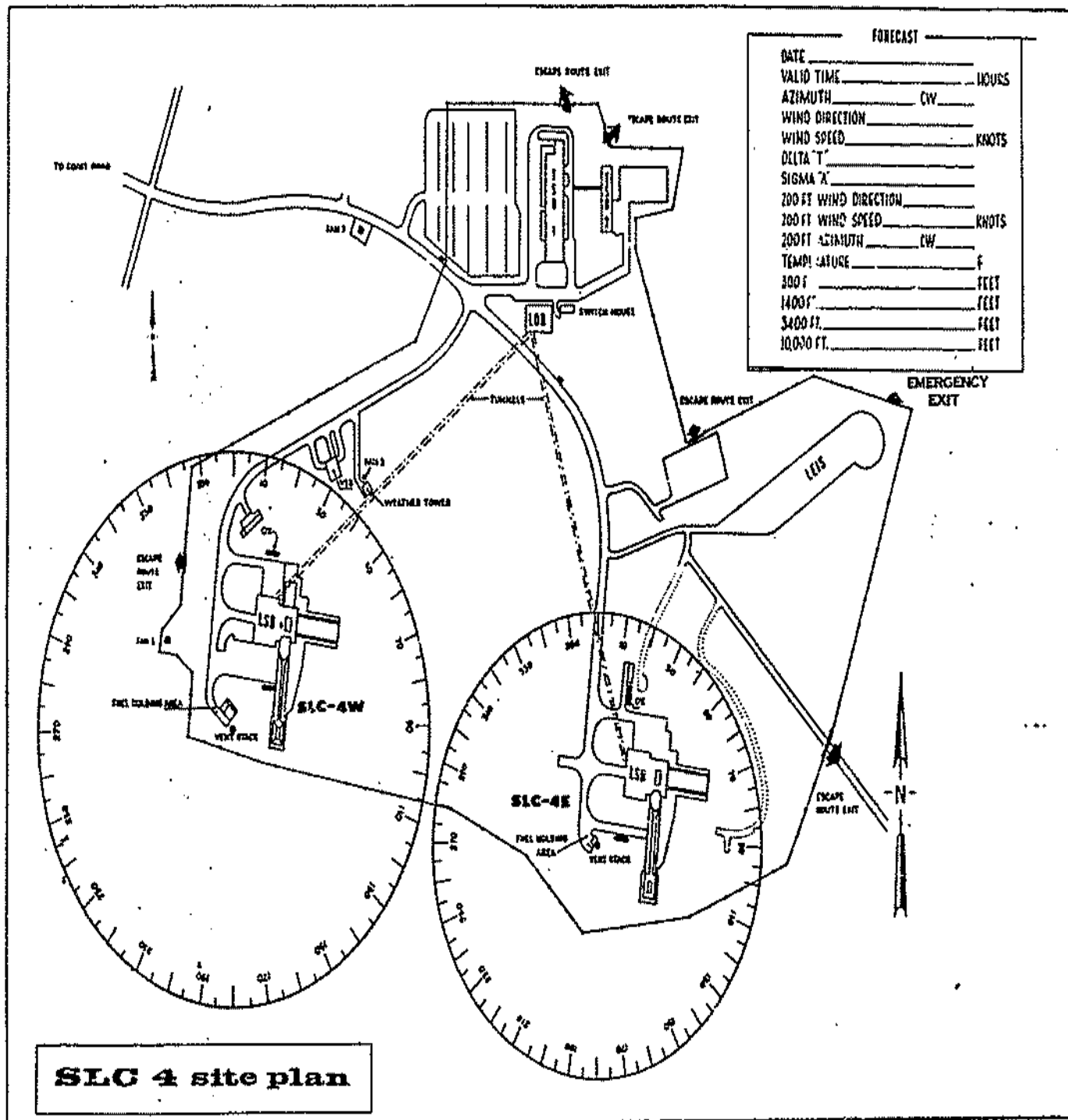
<u>OPERATION</u>	<u>CSO</u>	<u>CST</u>	<u>FIRE</u>	<u>HOSPITAL</u>	<u>MOS</u>	<u>LST</u>
R-1 Day Inspection	I	A				
Booster Emplacement	I	I				
RSV Load	I	A	A	I	A	
Vent Fuel	I	A		I	A	
Vent Oxidizer	I	A		I	A	
LN <sub>2</sub> Conversion	I	I				
LN <sub>2</sub> Transfer	I	I				
Mech Ord Install- Empty	I	I				
Ord Connect - Tanked	A	A	A	I	A	
SRM Buildup	I	I	I	I		
PTU Load/Unload	I	A	A	I	A	
SPS/SV Tanking	I	A	A	I	A	
SPL-DPL	A	A	A	I	A	
Pressurization	I	A	A	I	A	
Launch	A	A	A	A	A	A
Welding	I	I	A			
X-Ray	I	I		A		
Oxidizer Burner	I	I		I		
Tank Entry	I	I		A		
SV Mate/demate (Tanked)	A	A	A	I	A	

A = ACTION - The indicate support must be present before the operation may continue

I = INFORMATION - The indicated support agency is notified by MOSR, but is not required to be present.

Figure 2-23. Titan Support Required for Hazardous Operations.

Figure 2-24. SLC-4 Site Plan (THC Forecast).



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Chadwyck-Healey Inc., 1101 King Street, Alexandria, Virginia 22314

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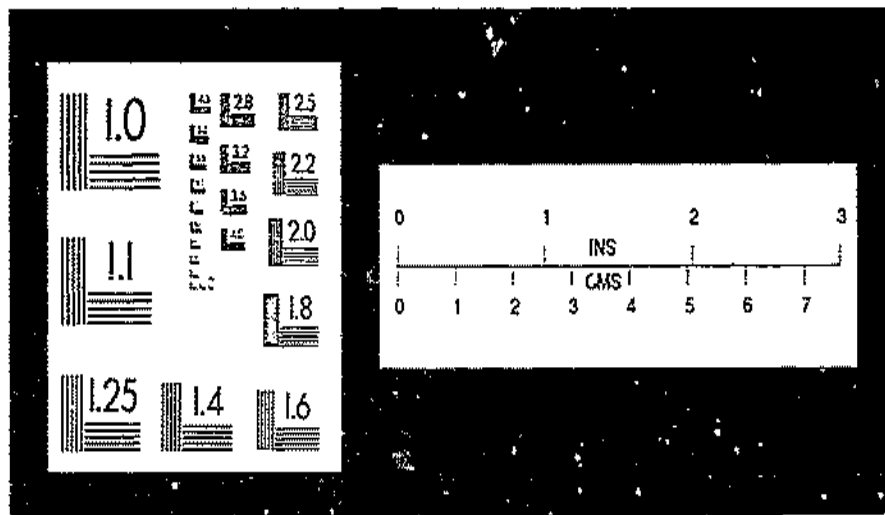
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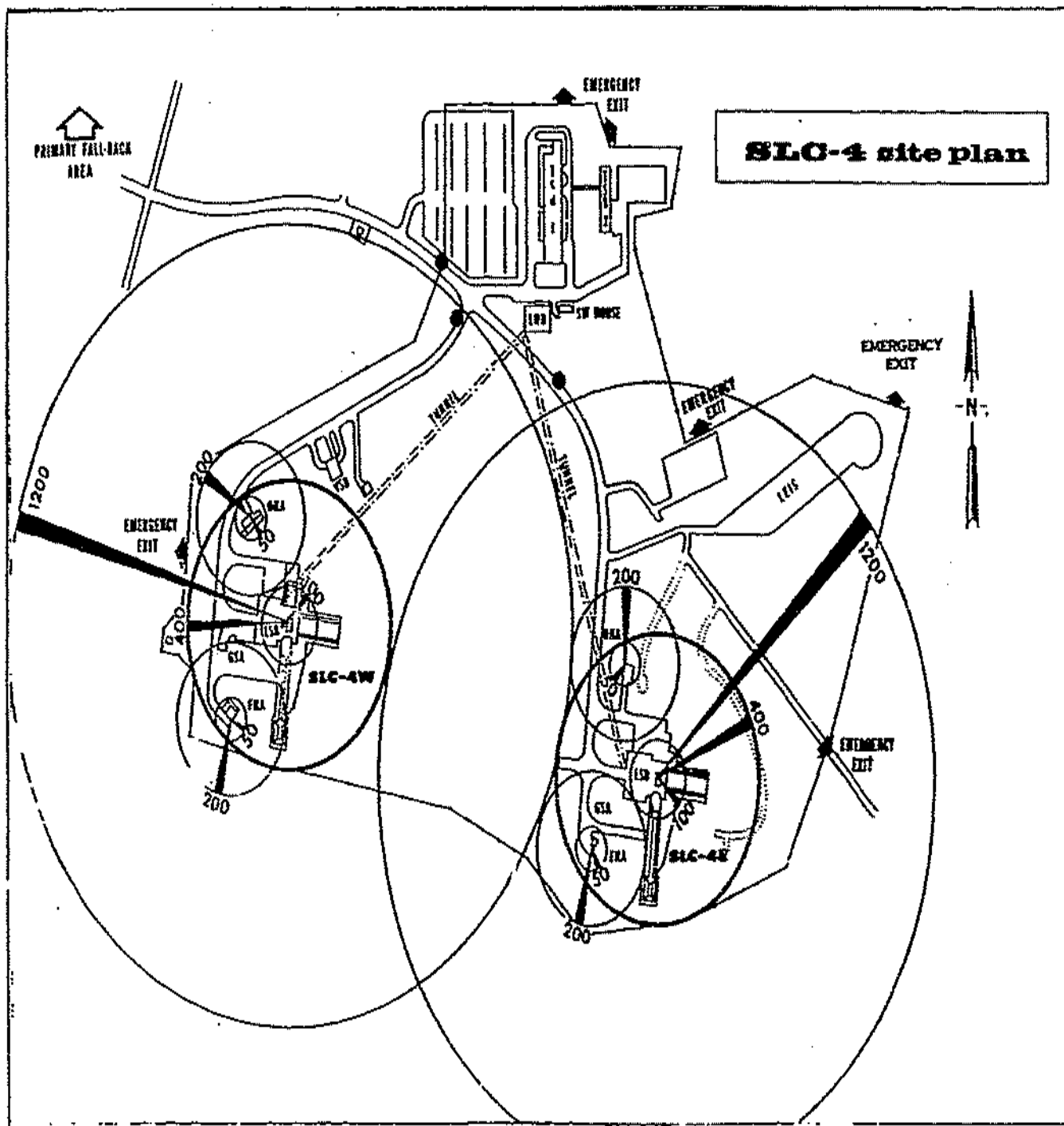
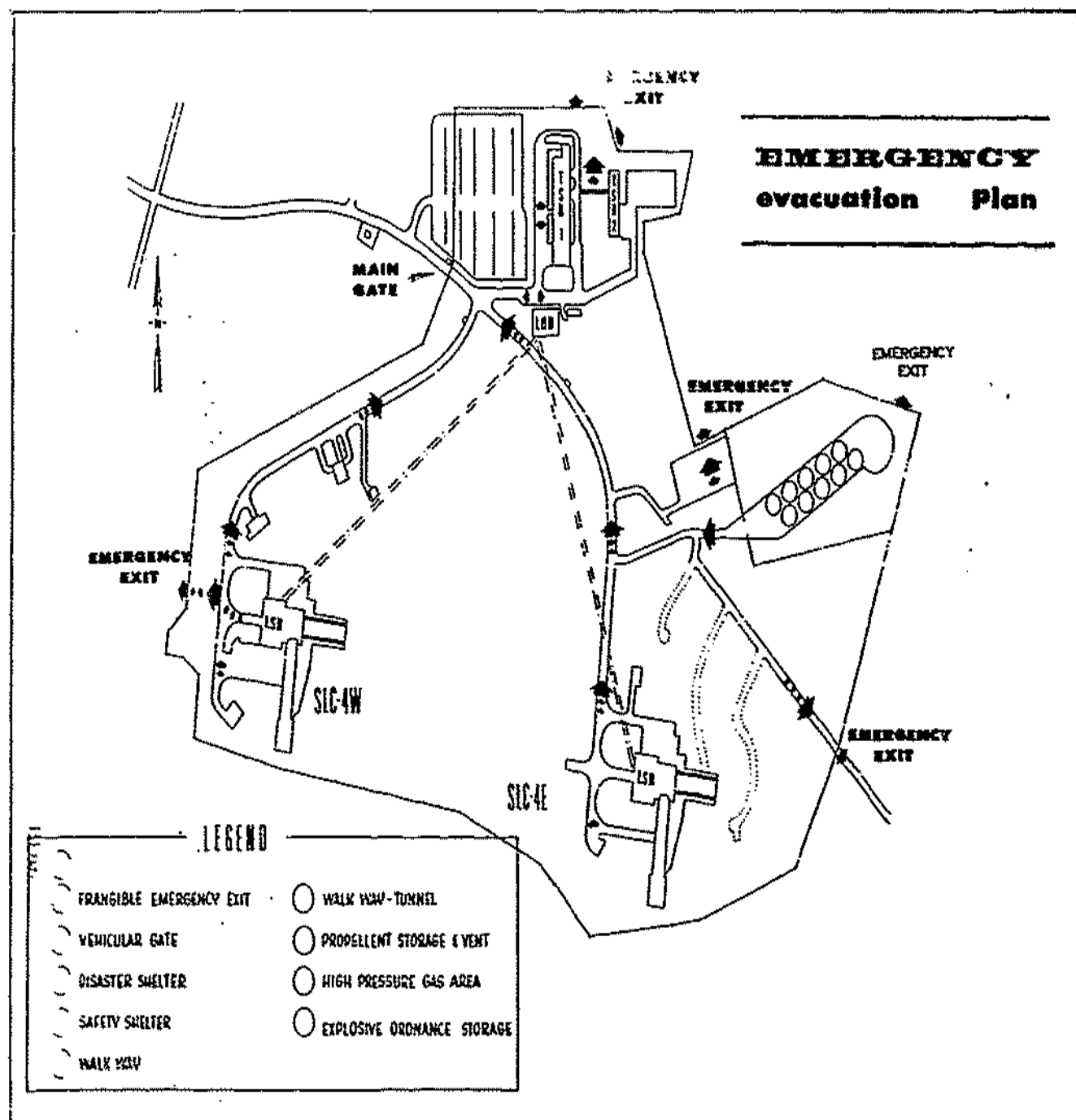


Figure 2-25. SLC-4 Site Plan (Safety Control Areas).

Figure 2-26. SLC-4 Emergency Evacuation Plan



## Chapter 3

## CRYOGENICS

3.1. Atlas Missiles. This chapter contains individual safety checklists for hazardous and dangerous operations associated with Atlas missiles.

## 3.2. Terms and Abbreviations:

CSO	Complex Safety Officer
CST	Complex Safety Technician
DPL	Duel Propellant Loading
GN <sub>2</sub>	Gaseous Nitrogen
IRFNA	Inhibited Red Fuming Nitric Acid
LC	USAF Launch Controller
LN <sub>2</sub> or LIN	Liquid Nitrogen
LO <sub>2</sub> or LOX	Liquid Oxygen
LOB	Launch Operations Building
LSB	Launch Support Building
LST	Launch Support Team
M&E AREA	Mechanical and Electrical Area
MDR	Mission Dress Rehearsal
MPCA	Missile Flight Control Area
MFCO	Missile Flight Control Officer
MFHA	Missile Flight Hazard Area
MOSR	Missile Operation Support Requirement
MSGSA	Missile System Ground Safety Approval
MST	Missile Service Tower
PTU	Propellant Transfer Unit
R-1	Days Before Launch
RSO	Range Safety Officer
RP-1	Rocket Propellant Fuel
RSV	Ready Storage Vessel
SPGG	Solid Propellant Gas Generator
TC	Test Conductor
THC	Toxic Hazard Corridor
UDMH	Unsymmetrical Dimethylhydrazine

- 3.1. Atlas Prelaunch Inspection (CSO/CST).
- 3.1.1. Additional Equipment. None required.
- 3.1.2. Support. None required.
- 3.1.3. Safety Control Area. Not Applicable.
- 3.1.4. Action Items:
  - 3.1.4.1. Check MOSR for support requirements.
  - 3.1.4.2. Attend LST briefing.
  - 3.1.4.3. Attend prelaunch countdown conference.
- 3.1.5. R-1 Day Inspection. Ensure the following:
  - 3.1.5.1. Communication systems are operational.
  - 3.1.5.2. Pad, flame bucket, and storage areas are free of debris and are clean.
  - 3.1.5.3. All loose or unnecessary equipment is removed.
  - 3.1.5.4. High pressure skids and oxidizer skids are free of leaks and loose panels.
  - 3.1.5.5. Showers and eyewash are operational.
  - 3.1.5.6. Umbilical mast and tower are inspected.
  - 3.1.5.7. Propellant rooms and trailers are inspected for leaks and cleanliness.
  - 3.1.5.8. Drain trench is clean and free of obstructions.
  - 3.1.5.9. Water system is operational
  - 3.1.5.10. Brief facility supervisors and WSMC representatives on discrepancies found and corrective actions required.

Figure 3-1. Atlas Prelaunch Inspection (CSO/CST).

3.2. Atlas Transfer of LO<sub>2</sub> OR LN<sub>2</sub> Storage Tanks or Transporter (CSO/CST).

3.2.1. Additional Equipment. Personal safety equipment as required.

3.2.2. Support. MOSR Required.

3.2.3. Safety Control Area. 50 foot radius.

WARNING

WHEN TRANSFERRING LO<sub>2</sub> OR LN<sub>2</sub> FROM STORAGE TO TRANSPORTER, PERSONNEL WILL MONITOR LIQUID LEVEL GAUGE ON TRANSPORTER TO PREVENT OVERFILL.

3.2.4. Action Items. Ensure the following:

3.2.4.1. No conflicting operations are being performed (procedures available).

3.2.4.2. Visual warning light is AMBER.

3.2.4.3. PA announcement is made before LO<sub>2</sub> transfer stating "NO SMOKING OR OPEN FLAME UNTIL FURTHER NOTICE."

3.2.4.4. Nonessential personnel and vehicles are removed from operating area.

3.2.4.5. Hardlines are laid and charged.

3.2.4.6. Water hose nozzle is cracked enough to allow a small trickle of water to flow into the flushing area.

3.2.4.7. LO<sub>2</sub> or LN<sub>2</sub> handlers are wearing faceshields, protective coveralls, gloves, and boots.

3.2.4.8. Showers and eyewash are operational.

3.2.4.9. Transfer area is clear and washed down.

3.2.4.10. Transporter is grounded and chocked.

3.2.4.11. Lines and connectors are monitored for leaks.

3.2.4.12. Transporter and storage vent areas are clear of personnel.

3.2.4.13. LO<sub>2</sub> or LN<sub>2</sub> spills are washed down during transfer.

3.2.4.14. PA announcement after completing the operation.

3.2.4.15. Approved procedures are in use.

Figure 3-2. Atlas Transfer of LO<sub>2</sub> or LN<sub>2</sub> to Storage Tanks or Transporter (CSO/CST).

---

3.3. Atlas Missile Emplacement or Removal (CSO/CST).

3.3.1. Additional Equipment. None required.

3.3.2. Support. MOSR required.

3.3.3. Safety Control Area. 150 foot radius or personnel shelter.

3.3.4. Action Items. Ensure the following:

3.3.4.1. No conflicting operations are being performed.

3.3.4.2. Nonessential equipment and personnel are evacuated from area prior to start.

3.3.4.3. Wind velocity is less than 30 mph (26 knots).

3.3.4.4. Visual warning light is AMBER.

3.3.4.5. Safety belts will be worn by personnel working on top of missile.

3.3.4.6. Approved procedures are in use.

3.3.4.7. Appropriate levels of MST are cleared.

3.3.4.8. PA announcements are made before and after completing the operation.

---

Figure 3-3. Atlas Missile Emplacement or Removal (CSO/CST).

---

3.4. Atlas Mate or Demate Payload (CSO/CST).

3.4.1. Additional Equipment. None required.

3.4.2. Support. MOSR required.

3.4.3. Safety Control Area. 150 foot radius or as determined by WSMC Safety.

3.4.4. Action Items. Ensure the following:

3.4.4.1. No conflicting operations are being performed.

3.4.4.2. Nonessential equipment is removed from area.

3.4.4.3. Wind velocity is less than 30 mph (26 knots).

3.4.4.4. Visual warning light is AMBER.

3.4.4.5. PA announcements are made before and after completing the operation.

3.4.4.6. Approved procedures are in use.

---

Figure 3-4. Atlas Mate or Demate Payload (CSO/CST).

3.5. Atlas Flight Pressure Test on Missile (CSO/CST).

3.5.1. Additional Equipment. Personal safety equipment as required.

3.5.2. Support. MOSR required.

3.5.3. Safety Control Area. 150 foot missile fuel tank - empty; 400 foot missile fuel tank - loaded; 400 feet for empty fuel tank when above 42.6 PSI.

NOTE: See attached "SLC-3 Area Map" (Figure 3-19) for approximate measurements of safety control areas.

3.5.4. Action Items. Ensure the following:

3.5.4.1. Communication between blockhouse and pad control.

3.5.4.2. Nonessential personnel and equipment are evacuated from area prior to start.

3.5.4.3. Personnel working around high pressure are wearing face shields.

3.5.4.4. Visual warning light is AMBER.

3.5.4.5. Approved procedures are in use.

3.5.4.6. PA announcement is made before start and after completing the operation.

Figure 3-5. Atlas Flight Pressure Test on Missile (CSO/CST).



---

3.6. Atlas Fuel Loading or Offloading - Missile (CSO/CST).

3.6.1. Additional Equipment. Personal safety equipment as required.

3.6.2. Support. MOSR required.

3.6.3. Safety Control Area. 150 foot radius East pad, 400 foot radius West pad.

3.6.4. Action Items. Ensure the following:

3.6.4.1. An inspection is made of the flame bucket area, plume area, IO<sub>2</sub> storage area, and fuel storage area.

3.6.4.2. One Scott backpack is in the crew shelter and one is in the LOX room.

3.6.4.3. Fire truck is on station.

3.6.4.4. Nonessential personnel and equipment are evacuated from hazard area.

3.6.4.5. Visual warning light is switched to AMBER.

3.6.4.6. Contact is maintained with blockhouse personnel at all times.

3.6.4.7. Leak check is performed when fuel transfer is complete.

3.6.4.8. PA announcement is made before and after completion of operation.

3.6.4.9. Approved procedures are in use.

---

Figure 3-6. Atlas Fuel Loading or Offloading - Missile (CSO/CST).

3.7. Atlas Ordnance Checkout, Installation, or Removal (CSO/CST).

3.7.1. Additional Equipment. Personal safety equipment as required.

3.7.2. Support. MOSR required.

3.7.3. Safety Control Area. As required (see figure 3-19).

WARNING

ORDNANCE ITEMS WILL NOT BE CHECKED ON LAUNCH EMPLACEMENTS WITHOUT WSMC/SE APPROVAL.

3.7.4. Action Items. Ensure the following:

3.7.4.1. No conflicting operations are being conducted.

3.7.4.2. TC initiates and terminates limited or minimum radiation (as required).

3.7.4.3. Visual warning light is AMBER.

3.7.4.4. Nonessential personnel are evacuated.

3.7.4.5. "No Voltage Check" is conducted with meter set at lowest DC/AC voltage scale before electrically connecting ordnance items.

3.7.4.6. Electrical connection is made immediately after the no voltage check.

3.7.4.7. Ordnance plugs are installed immediately after any ordnance item is removed.

3.7.4.8. Ordnance items are returned to storage area after removal.

3.7.4.9. PA announcement is made before and after completion of operation.

3.7.4.10. Approved procedures are in use.

Figure 3-7. Atlas Ordnance Checkout, Installation, or Removal (CSO/CST).

---

3.8. Atlas MDR/DPL (CSO/CST).

3.8.1. Additional Equipment. Personal safety equipment as required.

3.8.2. Support. MOSR required.

3.8.3. Safety Control Area. 1520 foot radius.

3.8.4. Action Items. Ensure the following:

3.8.4.1. Communication system is manned and operational.

3.8.4.2. Visual warning lights are AMBER.

3.8.4.3. Complex is clear of all nonessential vehicles.

3.8.4.4. Danger area is activated.

3.8.4.5. Complex area is clear and visual warning lights are RED.

3.8.4.6. Blockhouse blast doors, escape hatches, and air conditioning system are secure.

3.8.4.7. After LO<sub>2</sub> is off loaded clear CST and Safety Inspection team to the pad.

3.8.4.8. PA announcement is made before and after completion of operation.

3.8.4.9. Approved procedures are in use.

---

Figure 3-8. Atlas MDR/DPL (CSO/CST).

- 3.9. Atlas Launch (CSO).
- 3.9.1. Additional Equipment. Personal safety equipment as required.
- 3.9.2. Support. MOSR required.
- 3.9.3. Safety Control Area. MFCA and MFHA
- 3.9.4. Action Items. Ensure the following:
- 3.9.4.1. Communication channels are operational.
- 3.9.4.2. Status and alert lights are operational, and the MFCO's console is displaying AMBER.
- 3.9.4.3. Facility status lights are AMBER.
- 3.9.4.4. Necessary support elements are stationed, equipped, and briefed.
- 3.9.4.5. PA announcement is made directing the removal of all nonessential personnel and vehicles from the hazard area.
- 3.9.4.6. PA announcement is made initiating the controlled radiation period.
- 3.9.4.7. Area is clear of nonessential personnel and vehicles.
- 3.9.4.8. Clearance is given for destruct safety pin removal.
- 3.9.4.9. Controlled radiation period is ended.
- 3.9.4.10. LST is given complex status, number of personnel in the blockhouse, and post-launch instructions.
- 3.9.4.11. MFHA and MFCA are activated.
- 3.9.4.12. MFHA and MFCA are clear.
- 3.9.4.13. Visual warning lights are switched to RED.
- 3.9.4.14. Switch status and alert light to GREEN and ensure MFCO verbally confirms change in status. Arrange to monitor the MFCO net at T-5 minutes.
- 3.9.4.15. Send CST and guard to gate to establish roadblock after missile has programmed.
- 3.9.4.16. Clear LST chief, fire chief, and one fire truck to pad.
- 3.9.4.17. After clearance is received from CST, clear required support elements to pad.

Figure 3-9. Atlas Launch (CSO).

---

3.9.5. Normal Post-launch Procedures:

- 3.9.5.1. Clear CST and postlaunch safing team to pad for initial hazard evaluation.
- 3.9.5.2. Ensure that guard is positioned and instructed to prevent movement of nonessential vehicles.
- 3.9.5.3. Clear essential LST elements to pad.
- 3.9.5.4. After the CST verified that the pad is in a safe condition, release technicians required for safing.
- 3.9.5.5. Release safety control and allow normal access after the pad is safed.

3.9.6. Abnormal Events:

3.9.6.1. If the vehicle or vehicle fragments IMPACT ON LAND:

- 3.9.6.1.1. Obtain location of impact from fallback area observers or MPOD.
  - 3.9.6.1.2. Determine potential hazard to blockhouse personnel.
  - 3.9.6.1.3. Ensure appropriate status information and necessary instructions are relayed to blockhouse personnel.
  - 3.9.6.1.4. Coordinate escape actions when necessary.
  - 3.9.6.2. Launch abort with all propellants and all ordnance items on board and connected. Ensure:
    - 3.9.6.2.1. Command destruct transmitters are off.
    - 3.9.6.2.2. Ignition and destruct systems on the vehicle are electrically safe.
    - 3.9.6.2.3. Booster oxidizer tank is unloaded.
    - 3.9.6.2.4. Safety control area is reduced to proper radius.
    - 3.9.6.2.5. Pad status light is AMBER.
    - 3.9.6.2.6. Missile gas bottles are depressurized to 1000 psi (+/- 10 psi).
    - 3.9.6.2.7. Hydraulics are off.
    - 3.9.6.2.8. Booster crews are evacuated from area and second stage area ordnance crews are cleared for second stage destruct disconnect.
    - 3.9.6.2.9. Propellant lines are safe before releasing safety control.
- 

Figure 3-9 (continued). Atlas Launch (CSO).

3.10. Atlas Launch (CST).

3.10.1. Additional Equipment. Personal safety equipment as required.

3.10.2. Support. MOSR required.

3.10.3. Safety Control Area. MFCA and MFHA.

3.10.4. Action Items. Ensure the following:

3.10.4.1. An inspection is made of, and communication checks are made from, the following areas:

3.10.4.1.1.. LO<sub>2</sub> storage and skid area.

3.10.4.1.2. Flame bucket and flame area.

3.10.4.1.3. Fuel storage area.

3.10.4.1.4. High pressure area.

3.10.4.1.5. P&E area.

3.10.4.2. Emergency safety equipment is operational and correctly located.

3.10.4.3. Support elements are briefed and stationed.

3.10.4.4. Approved protection breathing equipment is in the crew shelter and the HFO room.

3.10.4.5. Firefighting equipment is on station.

3.10.4.6. Prior to LOX loading operations ensure:

3.10.4.6.1. Guards are posted.

3.10.4.6.2. LST has completed its initial security sweep.

3.10.4.6.3. CSO is informed after the area is clear and the blockhouse doors are closed.

3.10.4.6.4. Blockhouse escape hatches are not blocked.

3.10.4.6.5. CSO is aware of the number of personnel in the blockhouse.

3.10.5. Normal Post-launch Procedures.

3.10.5.1. Accompany post-launch safety team to the pad for initial hazard evaluation.

Figure 3-10. Atlas Launch (CST).

- 
- 3.10.5.2. Brief road guard.
  - 3.10.5.3. Clear essential LST elements to pad.
  - 3.10.5.4. Notify the CSO when the pad is safe.
- 

Figure 3-10 (continued). Atlas Launch (CST).

- 
- 3.11. Atlas Welding Operations System (CSO/CST).
    - 3.11.1 Additional Equipment. Personal safety equipment as required.
    - 3.11.2. Support. HOSR required.
    - 3.11.3. Safety Control Area. As determined by WSMC/SE.
    - 3.11.4. Action Items. Ensure the following:
      - 3.11.4.1. Nonessential personnel and equipment are evacuated from area prior to start.
      - 3.11.4.2. All flammable solvents and combustible materials are removed from the area.
      - 3.11.4.3. Task supervisor has the AF Form 592.
      - 3.11.4.4. Visual warning light is AMBER.
      - 3.11.4.5. After welding operations are complete, inspect immediate area of welding operations for hazardous condition.
      - 3.11.4.6. PA announcement is made before and after completion of the operation.
- 

Figure 3-11. Atlas Welding Operations System (CSO/CST).

3.12. Atlas Missile Tank Entry (CSO/CST).

3.12.1. Additional Equipment. Personal safety equipment as required.

3.12.2. Support. MOSR required.

3.12.3. Action Items. Ensure the following:

3.12.3.1. All gas sources (GN<sub>2</sub>, Helium, etc.) are disconnected from the missile.

3.12.3.2. Missile is grounded.

3.12.3.3. Oxygen content is AT LEAST 19.5%.

3.12.3.4. Two men don harness with rope attached. Both men wear breathing apparatus during initial entry (one enter and one backup).

3.12.3.5. Two men remain outside to handle the lifeline.

3.12.3.6. Air blower remains in operation while men are in tank.

3.12.3.7. Operation is conducted according to T.O. 00-25-235.

Figure 3-12. Atlas Missile Tank Entry (CSO/CST).



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3.13. Propellant Loading or Unloading (UDMH/IRFNA) (CST).

3.13.1. Additional Equipment:

3.13.1.1. Full protective suit, gloves, boots, and eye protection.

3.13.1.2. Canister mask or air line respirator if required.

3.13.2. Support:

3.13.2.1. Ambulance and medical technician on standby at hospital.

3.13.2.2. Fire truck on station.

3.13.2.3. Two MOS guards with radio equipped vehicles.

3.13.3. Safety Control Area. 50 foot radius.

WARNING

TRANSFER OF PROPELLANTS IS LIMITED TO ONE TYPE OF PROPELLANT AT A TIME. MAINTENANCE ON ONE SYSTEM, INVOLVING OPENING LINES OR TANKING, WILL NOT BE CONDUCTED WHILE PROPELLANT IS FLOWING THROUGH ANOTHER SYSTEM. THIS OPERATION WILL NOT BE CONDUCTED DURING HEAVY RAIN OR DURING AN ELECTRICAL STORM WITHIN A 10-MILE RADIUS.

3.13.4. Action Items. Ensure the following:

3.13.4.1. Acid suits and canister masks are available for all personnel in the hazard area.

3.13.4.2. Housekeeping is adequate.

3.13.4.3. There are no leaks in PTU or transporter.

3.13.4.4. Showers and eyewash are operational.

3.13.4.5. Aural-visual warning system operational. AMBER light on.

3.13.4.6. Communication system is operational.

3.13.4.7. Fire truck on pad and posted by CST.

3.13.4.8. All nonessential personnel are evacuated from hazard area. Entrances to south side of pad from the pad deck are placarded.

3.13.4.9. Approved procedures are used.

3.13.4.10. Weather conditions are GO.

---

Figure 3-13. Propellant Loading or Unloading (UDMH/IRFNA) (CST).

3.14. Atlas LN<sub>2</sub> or Helium Recharging.

3.14.1. Additional Equipment:

3.14.1.1. Face shield

3.14.1.2. Rubber apron.

3.14.1.3. Gauntlet gloves.

3.14.1.4. Boots.

3.14.2. Support. MOSR required.

3.14.3. Safety Control Area. 50 foot radius.

3.14.4. Action Items. Ensure the following:

3.14.4.1. Area is clear of nonessential personnel.

3.14.4.2. PA announcement is made prior to start, stating that hazardous operation is in progress; all nonessential personnel are to clear the gas storage area until further notice.

3.14.4.3. Personnel are wearing appropriate protective equipment.

3.14.4.4. Approved procedures are used.

3.14.4.5. PA announcement after completion.

Figure 3-14. Atlas LN<sub>2</sub> or Helium Recharging.

---

3.15. Atlas RP-1 Transfer to Storage Tank (CSO/CST).

3.15.1. Additional Equipment. None required.

3.15.2. Support. MOSR required.

3.15.3. Safety Control Area. 50 foot radius.

3.15.4. Action Items. Ensure the following:

3.15.4.1. No conflicting operations are being performed.

3.15.4.2. Nonessential personnel are removed from area.

3.15.4.3. Transporter is grounded and chocked.

3.15.4.4. Visual warning light is AMBER.

3.15.4.5. PA announcement, "No smoking or open flame until further notice", is made prior to transfer.

3.15.4.6. Lines and connections are monitored for leaks.

3.15.4.7. RP-1 spills are washed down.

3.15.4.8. PA announcement after completion.

3.15.4.9. Approved procedures are used.

---

Figure 3-15. Atlas RP-1 Transfer to Storage Tank (CSO/CST).

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3.16. Atlas Lifting Operations.

3.16.1. Additional Equipment. As required.

3.16.2. Support. MOSR not required.

3.16.3. Safety Control Area. 150 foot radius.

3.16.4. Action Items. Ensure the following:

3.16.4.1. PA announcement, "All nonessential personnel clear to 150 foot radius while lifting is in progress."

3.16.4.2. AMBER light turned on during complete lifting operation.

3.16.4.3. PA announcement when operation is complete.

3.16.4.4. Approved procedures are used.

NOTE: This procedure applies to all lifting operations, involving bridge crane and contractor crane operations on MST and pad deck.

---

Figure 3-16. Atlas Lifting Operations.

3.17. Atlas Ordnance Distance Criteria.

3.17.1. Ordnance - Mechanical Installation or Removal:

3.17.1.1. Clearance area - affected MST level.

3.17.1.1.1. SPGG initiator.

3.17.1.1.2. GG igniters.

3.17.1.1.3. Shroud initiator.

3.17.1.1.4. Separation valves.

3.17.1.1.5. Shroud thruster.

3.17.1.2. Clearance area - level, above, and below.

3.17.1.2.1. SPGG.

3.17.1.2.2. Hypergols.

3.17.1.2.3. Shroud rocket motor.

3.17.1.3. Clearance Area - 150 feet or personnel shelter (empty); 400 feet (fueled).

3.17.1.3.1. Destructor.

3.17.2. Ordnance - Electrical Connection or Disconnection:

3.17.2.1. Clearance area - affected MST level.

3.17.2.1.1. GG igniters.

3.17.2.1.2. Shroud thruster.

3.17.2.1.3. Separation valves.

3.17.2.2. Clearance area - level, above, and below (empty); 150 feet or personnel shelter (fueled).

3.17.2.2.1. Shroud initiator.

3.17.2.3. Clearance Area - 150 feet or personnel shelter (empty); 400 feet (fueled).

3.17.2.3.1. SPGG initiator.

3.17.2.3.2. Destructor.

Figure 3-17. Atlas Ordnance Distance Criteria.

<u>ORGANIZATION</u>	<u>CSO</u>	<u>CST</u>	<u>FIRE</u>	<u>HOSPITAL</u>	<u>MOS</u>	<u>LST</u>
Prelaunch Inspection	I	A				
Booster Emplacement	I	I				
RP-1 Load Missile	I	I	A	I		
Pressurization	I	I	I	I		
LO <sub>2</sub> or LN <sub>2</sub> Transfer	I	I	I	I		
Mate/demate	I	I	I	I		
MDR/DPL	A	A	A	I	A	
Ordnance Operations*	A/I	A/I	A/I	A/I	A/I	
Launch	A	A	A	A	A	A
Tank Entry	I	I	I	A		
Welding	I	I	A	I		

\*Applicable MOSR will indicate support requirements.

A = Action. The indicated support must be present before the operation may start.

I = Information. The indicated support agency is notified by MOSR, but is not required to be present.

Figure 3-18. Atlas Support Required for Hazardous Operations.

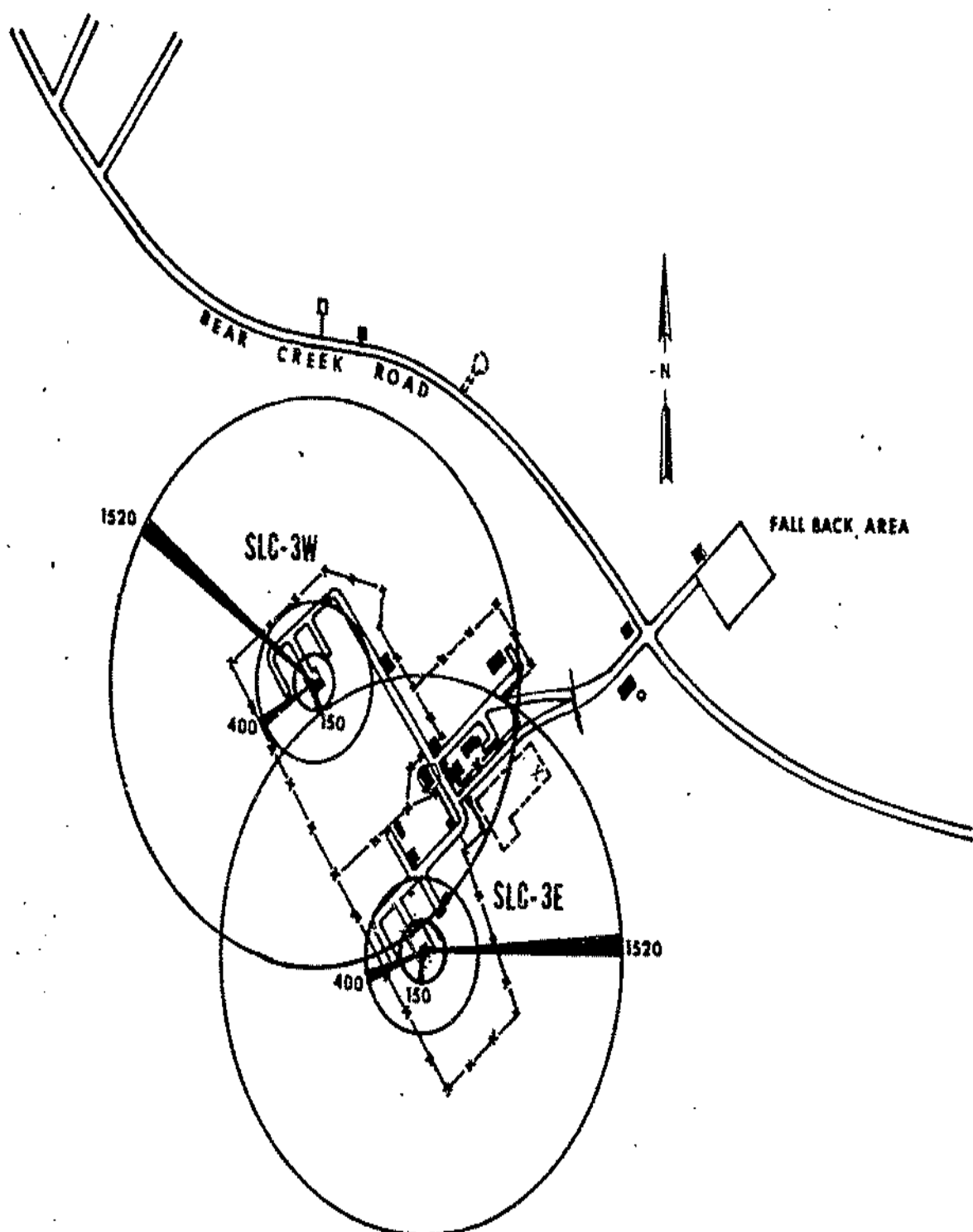


Figure 3-19. Atlas SLC-3 Area Map

## Chapter 4 .

## SOLIDS SYSTEMS

4.1 Minuteman and Scout Missiles. This chapter contains safety checklists for hazardous and dangerous operations and special inspections in Minuteman and Scout facilities.

## 4.2. Terms and Abbreviations.

ACS	Attitude Control System
CSO	Complex Safety Officer
CST	Complex Safety Technician
CTLI	Combat Training Launch Instrumentation
DPIF	Destruct Package Installation Facility
EED	Electro Explosive Device
EMT	Emergency Medical Team
EOD	Explosive Ordnance Disposal
EMT	Electro Mechanical Team
FBA	Fallback Area
G&C	Guidance & Control
H <sub>2</sub> O <sub>2</sub>	Hydrogen Peroxide
LD	Launch Director
LER	Launcher Equipment Room
LF	Launch Facility
LST	Launch Support Team
MFCA	Missile Flight Caution Area
MFCO	Missile Flight Control Officer
MFHA	Missile Flight Hazard Area
MM	Minuteman
MOSR	Missile Operations Support Requirements
MPAL	Modernized Penetration Aids Launcher
PSI	Per Square Inch
PSRE	Propellant System Rocket Engine
RAS	Retro Adapter System
RS	Reentry System
PSS	Premature Separation System
RV	Reentry Vehicle
S&A	Safe & Arm
SCS	Safety Control Switch
TC	Test Conductor
TE	Transporter Erector
TLV	Threshold Limit Value

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4.1. Minuteman Five Day Premissile Emplacement Inspection (CSO/CST).

4.1.1. Additional Equipment and References. Not applicable

4.1.2. Support. None required.

4.1.3. Safety Control Area. Not required.

4.1.4. Action Items. Ensure the following:

4.1.4.1. Task supervisor gives a comprehensive safety briefing.

4.1.4.2. Pad supervisor's safety problems are identified and action is satisfactory.

4.1.4.3. Facility housekeeping is adequate.

4.1.4.4. Lighting systems are operational and are in a safe condition.

4.1.4.5. All signs are properly placed.

4.1.4.6. No smoking rule is enforced.

4.1.4.7. Proper parking procedures are being enforced and emergency egress routes are not blocked.

4.1.4.8. Evacuation plan is adequate and current.

4.1.4.9. Applicable fire prevention rules are enforced.

4.1.4.10. First aid equipment is on site and in good condition.

4.1.4.11. Daily facility inspections are being performed and recorded and show no significant discrepancies.

4.1.4.12. Required emergency breathing equipment is available and operational (MM-III sites only, and according to Boeing D2-9460).

4.1.4.13. Brief facility supervisors and WSMC representatives on discrepancies found and corrective actions required.

---

Figure 4-1. Minuteman Five Day Premissile Emplacement Inspection (CSO/CST).



- 4.2. Minuteman Prelaunch Inspection (CST).
- 4.2.1. Additional Equipment and References. None required.
- 4.2.2. Support. None required.
- 4.2.3. Safety Control Area. Not applicable.
- 4.2.4. Action Items. Ensure the following:
  - 4.2.4.1. Appropriate fire symbol sign is posted at access road.
  - 4.2.4.2. General housekeeping is adequate.
  - 4.2.4.3. All nonessential equipment is removed.
  - 4.2.4.4. All loose equipment is removed.
  - 4.2.4.5. Post-launch penetration equipment is available and operational.
  - 4.2.4.6. All fire prevention rules are adhered to.
  - 4.2.4.7. Status lights are operational.
  - 4.2.4.8. Hard line communications are operational.
  - 4.2.4.9. Review the "backout" schedule with facility supervisors
  - 4.2.4.10. Daily facility inspections are being performed, recorded, and show no significant discrepancies.
- 4.2.5. Brief facility supervisors and WSMC representatives on discrepancies found and corrective actions required.

Figure 4-2. Minuteman Prelaunch Inspection (CST).

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### 4.3. Minuteman Missile Emplacement or Removal (CST).

4.3.1. Additional Equipment and References. None required.

4.3.2. Support. None required.

4.3.3. Safety Control Area. Area bordered by facility fence.

4.3.4. Action Items. Ensure the following:

4.3.4.1. Fire symbol sign is displayed at LF access road.

4.3.4.2. Warning light is on AMBER.

4.3.4.3. Safety control switch is safe.

4.3.4.4. Green CHLI plug is installed.

4.3.4.5. All missile safing pins are installed in the missile.

4.3.4.6. Nonessential personnel and vehicles are removed from site.

4.3.4.7. All nonessential gear and vehicles are removed from approach lanes and from area around the TE.

4.3.4.8. All required fire extinguishers are present and operational.

4.3.4.9. Ensure TE tractor has been inspected for conditions which may be hazardous to the operation.

4.3.4.10. TE and missile are properly grounded.

4.3.4.11. TE has sufficient fuel for the operation.

4.3.4.12. Safety lanyards are available, serviceable, and used when required.

4.3.4.13. Positive communications exist between TE control panel operator and observer.

4.3.4.14. Safety rails are installed prior to opening launcher.

4.3.4.15. Qualified operators or observers are stationed adjacent to the trailer to monitor the instrument panel and near the TE to monitor erection and lowering operations.

4.3.4.16. Adequate access control is maintained.

4.3.4.17. All emergency and mishap action directives are in compliance.

---

Figure 4-3. Minuteman Missile Emplacement or Removal (CST).

4.3.5. Emergency Procedures:

4.3.5.1. In case of electrical or hydraulic failure, ensure:

4.3.5.1.1. Emergency operational procedures comply with TOs. Stop the operation if appropriate safety procedures are not followed.

4.3.5.1.2. Safety belts are utilized if ascent into the TE is necessary.

4.3.5.1.3. Positive or aural communications are maintained at all times if electrical communication fails.

4.3.5.2. In case of a serious fire in the TE, LER, or launch tube, or in case of an uncontrolled fire within the facility fence:

4.3.5.2.1. Evacuate all personnel to a distance of 2000 feet and set up road blocks.

4.3.5.2.2. Notify the Base Fire Department (117) and Range Scheduling (866-8825) of the missile emergency.

4.3.5.3. If missile is jarred or dropped, ensure:

4.3.5.3.1. Operation is stopped.

4.3.5.3.2. A missile potential hazard is declared.

4.3.5.3.3. All emergency and mishap action directives are complied with.

Figure 4-3. Minuteman Missile Emplacement or Removal (CST).

#### 4.4. Minuteman Safing Pin Removal or Installation (CST).

4.4.1. Additional Equipment and References. None required.

4.4.2. Support. None required.

4.4.3. Safety Control Area. Area bordered by facility fence.

4.4.4. Action Items. Ensure the following:

4.4.4.1. Pin pull is properly scheduled; that is, it is followed immediately by an operation requiring the pins to be removed and that no intervening unauthorized operation will be permitted.

4.4.4.2. Fire symbol sign is displayed at LP access road.

4.4.4.3. AMBER warning light is on.

4.4.4.4. SCS is SAFE.

4.4.4.5. Green CTLL plug is installed.

4.4.4.6. Fire lanes are clear.

4.4.4.7. All nonessential personnel and vehicles are evacuated from site.

4.4.4.8. The supervisor maintains adequate access control.

4.4.4.9. Crane or boom truck (if applicable) is grounded and has sufficient fuel.

4.4.4.10. Work cage is properly secured and free of loose objects, ground cable is correctly used and all tools are secured by lanyards.

4.4.4.11. Safety belts are in good condition and are properly used.

4.4.4.12. Safety rails are installed around silo opening before door is retracted.

4.4.5. Emergency Procedures.

4.4.5.1. If the Safe and Arm device indicates ARMED after pin is removed and cannot be returned to SAFE using approved procedures, the operation will be held at that point and BOD notified.

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Figure 4-4. Minuteman Safing Pin Removal or Installation (CST).

4.5. Minuteman Command Destruct Check or Safing Pin Removal and Red Plug Installation (CSO/CST).

- 4.5.1. Additional Equipment and References. None required.
- 4.5.2. Support. Radio equipped road guards as specified in the MOSR.
- 4.5.3. Safety Area Control. Approximately 800 foot radius, roadblocks as indicated in maps herein.
- 4.5.4. Action Items. Ensure the following:
  - 4.5.4.1. Which safing pins are removed.
  - 4.5.4.2. The status of the CTLI plug.
  - 4.5.4.3. The SCS is SAFE
  - 4.5.4.4. Fire symbol sign is displayed at LF access pad.
  - 4.5.4.5. No internal (missile) switching is permitted after red plug is installed and before evacuation is complete.
  - 4.5.4.6. Danger area is clear.
  - 4.5.4.7. Activate RED light.
  - 4.5.4.8. Give test conductor clearance to proceed with the test.
  - 4.5.4.9. During conduct of the test procedure, monitor carefully the voice responses of WSMC destruct transmitter operating agencies and the destruct system indicator lights on the CSO console.
  - 4.5.4.10. After the checks are terminated and the monitor indicates safe, release road blocks and clear the team back into the facility.
  - 4.5.4.11. After green exchange plug is installed, ensure pin installation will take place before any other activity is performed unless otherwise permitted by approved procedures and schedules.

Figure 4-5. Minuteman Command Destruct Check or Safing Pin Removal and Red Plug Installation (CSO/CST).

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4.6. Transport, Mate, or Demate RAS and MPAL (CST) (LF 03 and 06 Only).

4.6.1. Additional Equipment and References. None required.

4.6.2. Support. None required.

4.6.3. Safety Control Area. Area bordered by facility fence.

4.6.4. Action Items. Ensure the following:

4.6.4.1. Fire symbol sign is displayed at LF access road.

4.6.4.2. AMBER light is on.

4.6.4.3. All nonessential equipment and vehicles are removed from the approach lanes and from around the van.

4.6.4.4. All required fire extinguishers are present and ready.

4.6.4.5. Nonessential personnel and vehicles are removed from site.

4.6.4.6. Guidance and Control van or transport vehicle, as the case may be, are properly grounded.

4.6.4.7. Safety rails, environmental shield (if used), and scuff plates are properly installed.

4.6.4.8. If any RV van is used, check hoist for inspection currency.

4.6.4.9. Adequate access control is maintained.

4.6.5. In case of serious fire within the van, LER, launcher tube, or uncontrolled fire within the facility fence:

4.6.5.1. Evacuate all personnel to a distance of 2000 feet and set up road blocks.

4.6.5.2. Notify Base Fire Department (117) and Range Scheduling (276-8825).

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Figure 4-6. Transport, Mate, or Demate RAS and MPAL (CST) (LF 03 and 06 Only).

- 4.7. Minuteman II and III PSRE and RS Mate or Demate (CST).
- 4.7.1. Additional Equipment and References. None required.
- 4.7.2. Support. None required.
- 4.7.3. Safety Control Area. Area bordered by facility fence.
- 4.7.4. Action Items. Ensure the following:
  - 4.7.4.1. Fire symbol sign is displayed at LF access road.
  - 4.7.4.2. Light is on AMBER.
  - 4.7.4.3. All nonessential equipment is removed from the approach lanes and from around the van.
  - 4.7.4.4. All required fire extinguishers are present and operational.
  - 4.7.4.5. Nonessential personnel and vehicles are removed from site.
  - 4.7.4.6. RV G&C van and load are properly grounded.
  - 4.7.4.7. Safety rails and scuff plates are properly installed.
  - 4.7.4.8. RV G&C van hoist shows current inspection or load test.
  - 4.7.4.9. Adequate access control is maintained.
- 4.7.5. The following conditions constitute an emergency:
  - 4.7.5.1. Uncontrolled fire within 100 feet of PSRE.
  - 4.7.5.2. A propellant spill, suspected or actual leak.
- 4.7.6. If an emergency occurs:
  - 4.7.6.1. Evacuate all personnel to a distance of 2000 feet and set up roadblocks.
  - 4.7.6.2. Notify the Base Fire Department (117) and Range Scheduling (276-8825).

Figure 4-7. Minuteman II and III PSRE and RS Mate or Demate (CST).

#### 4.8. Minuteman Launch (CST).

4.8.1. Additional Equipment and References. None required.

4.8.2. Support. Launch Support Team.

#### 4.8.3. Safety Control Area:

4.8.3.1. Approximately 800 foot radius for command destruct checks. (Security police will be briefed, posted, and controlled by the LST Chief.)

4.8.3.2. MFHA and MFCA.

#### 4.8.4. Action Items - Prelaunch:

4.8.4.1. Verify final backout crew has completed work and departed.

4.8.4.2. Proceed to designated fallback area, coordinate activities with LST Chief.

4.8.4.3. Proceed to CTLI, coordinate penetration procedures with CSO and facility team members.

4.8.4.4. Depart CTLI with appropriate team members at prearranged time and proceed to FZA (for launches from LF-06 only). During launches from LF-03, all personnel remain at CTLI building until T+90 seconds or until released by the CSO.

#### 4.8.5. Action Items - Post-launch:

4.8.5.1. Proceed to LF after missile has been launched as directed by the CSO.

4.8.5.2. Confirm light is on AMBER.

4.8.5.3. Establish communications with CSO upon arrival at LF.

4.8.5.4. Advise CSO of LF status. (Report unusual hazards or visible damage.)

4.8.5.5. Allow EMT to enter LF after clearance is received from CSO. Ensure areas and LER access and silo opening are kept clear of all personnel except those opening hatchway and installing guardrails.

4.8.5.6. Initially allow only essential personnel access to the LF, for example, environmental health, fire department, facility personnel installing barriers, etc.

#### 4.8.6. Post-launch Penetration:

4.8.6.1. Monitor installation of safety rails, hatchway barriers, etc.

4.8.6.2. Ensure personnel entering below ground areas, before atmosphere is verified safe, are wearing self-contained breathing apparatus and communications equipment.

4.8.6.3. Ensure that self-contained breathing apparatus is in working condition and that it contains an adequate supply of air.

---

Figure 4-8. Minuteman Launch (CST).



4.8.6.4. Monitor toxicity checks of the IER and the underground equipment buildings. These tasks will be performed by environmental health technicians or qualified contractor operators.

4.8.6.5. Allow only a two-man contractor team or a two-man EMT and one contractor QC representative to enter the IER before the atmosphere is verified safe.

4.8.6.6. The launcher tube must be considered unsafe until atmospheric sampling checks have been made to verify toxicity levels are below TLV.

4.8.6.7. Release the pad to the contractor or the pad supervisor when all safety requirements are met.

4.8.7. Launcher Facility Penetration During Countdown:

4.8.7.1. Penetration during countdown will only be done with the concurrence, and under the direction, of the CSO.

4.8.7.2. Obtain from the CSO the number of personnel penetrating, the reason for penetrating, the specific work to be accomplished, and the special instructions to be given those penetrating.

4.8.7.3. Escort the approved team to the LF, notify the CSO upon arrival.

4.8.7.4. Monitor all activities and ensure prebriefed parameters are not exceeded.

4.8.7.5. Notify the CSO when leaving the LF, returning to the CTLI or fallback area.

4.8.8. Emergency Procedure (Hangfire):

4.8.8.1. Identify personnel that will safe the system.

4.8.8.2. Upon direction of CSO, proceed to the LF with the safing team.

4.8.8.3. Confirm light is on AMBER.

4.8.8.4. Monitor installation of SCS and green CTLI plug.

4.8.8.5. Allow only essential personnel in the LF until safing pins have been installed.

4.8.8.6. After pin installation is complete and any investigative requirements are met, release control of the facility.

4.8.9. Missile Disaster:

4.8.9.1. If the impact area involves the LF, obtain instructions from CSO.

4.8.9.2. If the impact area is other than the LF, perform normal post-launch procedures upon notification from CSO.

Figure 4-8 (continued). Minuteman Launch (CST).

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#### 4.9. Minuteman Launch (CSO).

4.9.1. Additional Equipment and References. None required.

4.9.2. Support. LST.

4.9.3. Safety Control Areas:

4.9.3.1. Approximately 800 foot radius for command destruct checks. (Security Police will be briefed, posted, and controlled by the LST Chief.)

4.9.3.2. MFHA and MFCA.

4.9.4. Action Items. Ensure the following:

4.9.4.1. Communication channels are operational. Check MFCO status lights and advise him that you will join the net at T-3.

4.9.4.2. Status and alert lights are operational and both the MFCO's and LD's consoles are displaying AMBER.

4.9.4.3. Facility status lights are AMBER.

4.9.4.4. Necessary support elements are on station, properly equipped, and briefed.

4.9.4.5. LF area is cleared for destruct check.

4.9.4.6. Aural-visual warning light is switched to RED. Maintain a 800 foot danger area until destruct checks, S&A check, power transfer switch check, C-band beacon checks, PSS timer checks, and missile liftoff checks are completed.

4.9.4.7. Missile Flight Hazard Area and Missile Flight Caution Area are activated.

4.9.4.8. MFHA and MFCA is clear. (LST will confirm at about T-30.)

4.9.5. Switch status and alert lights to GREEN; ensure MFCO is aware of change in status. Begin monitoring MFCO's net at T-3 minutes.

4.9.6. Normal Post-Launch Procedures:

4.9.6.1. Allow post-launch safing team to enter facility gate after direction to do so as stated in the countdown procedure.

4.9.6.2. Transfer safety control of the LF to CST.

---

Figure 4-9. Minuteman Launch (CSO).

4.9.7. Abnormal Events:4.9.7.1. If the vehicle or vehicle fragments impact on land:

4.9.7.1.1. Obtain location of impact from fall back area observer or MFCC.

4.9.7.1.2. Determine potential hazards involved.

4.9.7.1.3. Notify the Accident Investigation Officer.

4.9.7.1.4. If the accident does not involve the facility area allow post-launch safing after direction is received from the Launch Director.

4.9.7.1.5. If the launch facility is involved in the impact, coordinate with the Disaster Control Team Chief also, before entry.

4.9.7.2. If the missile misfires or hangfires:

4.9.7.2.1. Ensure that MFHA and destruct system capability are kept in launch configuration for a minimum of 30 minutes.

4.9.7.2.2. Allow no one, regardless of circumstances, to return to the pad until the waiting period (60 min) has elapsed and the power source is verified to be below maximum no-fire of the initiators.

4.9.7.2.3. Ensure that the facility safing team reports to CTLI room before proceeding to the LP and is briefed by the LD, TC, and CSO.

4.9.7.3. Prior to permitting safing team to proceed to pad, ensure that:

4.9.7.3.1. The electrical system is safe according to countdown documents and technical orders.

4.9.7.3.2. The destruct safe and arm device is switched to SAFE.

4.9.7.3.3. The destruct system power is turned off.

4.9.7.3.4. The destruct transmitters are turned off.

4.9.7.3.5. The PSS is SAFE.

4.9.7.3.6. Maintain a 1200 foot hazard area until the CTLI Green plug is installed and the SCS is locked in the SAFE position.

4.9.7.3.7. At completion of the above step reduce the hazard area to the facility fence until missile safing pins are installed.

Figure 4-9 (continued). Minuteman Launch (CSO).

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4.10. Minuteman MPAL Pressurization (LF-03 and 06) (CST).

4.10.1. Additional Equipment and References. None required.

4.10.2. Support. None required.

4.10.3. Safety Control Area. At the start of pressurization in excess of 2500 psi establish the hazard area which includes the surface only of the LF inside the facility fence.

4.10.4. Action Item. Ensure the following:

4.10.4.1. Fire symbol sign is displayed at LF access road.

4.10.4.2. Layout of high pressure lines and equipment meets all safety requirements.

4.10.4.3. Nonessential personnel and vehicles are evacuated from the hazard area.

4.10.4.4. There will be no vehicle movement inside the vehicle fence until the operation is completed and high pressure lines are disconnected.

4.10.4.5. Light is on AMBER.

4.10.5. After the MPAL tank reaches desired pressure and pressure is no longer increasing (during freon loading), or after power to ACS is cut off (during ACS heater operation), the hazard area may be deactivated.

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Figure 4-10. Minuteman MPAL Pressurization (LF-03 and 06) (CST).

#### 4.11. Scout Ordnance Connect and Readout (CSO/CST).

4.11.1. Additional Equipment and References. Procedure No. 6-3-4 (Electro Explosives Installation).

#### 4.11.2. Support:

4.11.2.1. Two roadblock guards will report to the CST (or to the CSO in the blockhouse, if a CSO is present) 1/2 hour prior to firing line connection. One will be posted at the normal access control point on Delphy road opposite the blockhouse and the other 1200 feet east of the pad on Avery road (300 feet past Cosmo Road).

4.11.2.2. Fire truck and crew on station.

#### 4.11.3. Safety Control Area:

4.11.3.1. The shelter hazard area during ordnance connection.

4.11.3.2. 1200 foot radius hazard area during firing line connection.

4.11.3.3. 1200 foot danger area during read out procedures.

#### 4.11.4. Action Items. Ensure the following:

4.11.4.1. Shelter and pad area are inspected.

4.11.4.2. All missile stages are grounded to transporter and transporter to facility ground.

4.11.4.3. Airborne half of first stage firing line is shorted out (connect to P502 Short on the launcher.)

4.11.4.4. Communication from the shelter is working.

4.11.4.5. Fire hoses are in place.

4.11.4.6. Correct fire symbol is displayed.

4.11.5. Brief MOS security guard on control area, sweep requirements, one guard at the blockhouse road telephone (call the CSO when posted). Second guard, clear 1200 foot hazard area and remain stationed a minimum of 1200 feet from the launcher (on Avery road at least 300 feet past Cosmo road.)

4.11.6. Brief fire crew supervisor on task to be performed, hazards, placement of the fire truck, and determine if a shift change will take place during the operation.

#### 4.11.7. Verify the following:

4.11.7.1. AMBER light is on at start of operation.

4.11.7.2. Nonessential personnel are evacuated from the shelter during ordnance connect or disconnect.

Figure 4-11. Scout Ordnance Connect and Readout (CSO/CST).

- 4.11.7.3. Personnel are following approved procedures.
  - 4.11.7.4. Personnel in shelter are using wrist stats and leg stats.
  - 4.11.7.5. Adequate no voltage checks are conducted prior to all ordnance connections.
  - 4.11.8. Prior to connecting the firing line, all nonessential personnel will be evacuated to a distance of 1200 feet.
  - 4.11.9. After the first stage firing line is connected the ordnance crew and CST will evacuate to the block house. Enroute, the CST will check the pad area and buildings to verify the 1200 foot danger area is evacuated. On the way out, the CST will pick up the facility security guard at the gate and verify no access badges are in his possession. Guard will be taken to blockhouse. Inform CSO of the status, especially if badge count indicates someone is missing.
  - 4.11.10. Aural-visual warning light is switched to RED at the pad and AMBER at the blockhouse.
  - 4.11.11. Give TC clearance to proceed with ordnance readout.
  - 4.11.12. After completion of readout operation, switch blockhouse status light to GREEN and pad light to AMBER. Maintain 1200 foot hazard area while accompanying pad control and ordnance crew to pad.
  - 4.11.13. Deactivate 1200 foot hazard area and release safety control after firing lead is again shorted.
- 

Figure 4-11 (continued). Scout Ordnance Connect and Readout (CSO/CST).

- 4.12. Scout Launch Rehearsal (CSO).
- 4.12.1. Additional Equipment and References. None required.
- 4.12.2. Support:
- 4.12.2.1. Fire truck and crew on station.
- 4.12.2.2. Two roadblock guards.
- 4.12.3. Safety Control Area:
- 4.12.3.1. The pad area for missile erection.
- 4.12.3.2. 1200 foot radius hazard area for first stage firing line connection.
- 4.12.3.3. 1200 foot radius danger area for ordnance readout.
- 4.12.4. Action Items. Ensure or verify:
- 4.12.4.1. Ensure the firing console arming handle is safe, padlocked, and the key in possession of the CSO, except when required to be unlocked by countdown procedures.
- 4.12.4.2. Aural-visual warning lights are AMBER on the pad and GREEN at the blockhouse.
- 4.12.4.3. Fire department pumper and crew are on station.
- 4.12.4.4. Obtain from CST safety status of the vehicle and pad prior to start of each countdown task.
- 4.12.4.5. The 1200 foot hazard area is clear of all nonessential personnel prior to stray voltage checks and first stage ignition hookup.
- 4.12.4.6. The danger area is cleared and all support elements are stationed prior to ordnance readout. RED light on pad and AMBER for blockhouse.
- 4.12.5. Post-test. Verify the following:
- 4.12.5.1. Missile and ordnance systems are deenergized (power is off).
- 4.12.5.2. Aural visual warning light is switched to AMBER at pad, GREEN at blockhouse.
- 4.12.5.3. Only essential personnel are on pad until safing is completed.
- 4.12.5.4. Ordnance team disconnects first stage firing line and connects it to ground.
- 4.12.5.5. Firemen accompany erection or retraction crew to pad.
- 4.12.5.6. Warning light is switched to GREEN and pad is open to normal work after Scout is lowered to 2 degree elevation and the S&A pins are installed.

Figure 4-12. Scout Launch Rehearsal (CSO).

---

#### 4.13. Scout Launch Rehearsal (CST).

4.13.1. Additional Equipment and References. None required.

#### 4.13.2. Support:

4.13.2.1. Fire truck and crew on station at beginning of countdown.

4.13.2.2. Two roadblock guards at beginning of Task 5 (firing line connection).

#### 4.13.3. Safety Control Area:

4.13.3.1. The pad area for missile erection.

4.13.3.2. 1200 foot radius hazard area for first stage firing line connection.

4.13.3.3. 1200 foot radius danger area for ordnance readout or safing.

#### 4.13.4. Action Items. Ensure the following:

4.13.4.1. Communication systems are operational.

4.13.4.2. Aural-visual warning lights are operational.

4.13.4.3. Support elements are verified present, briefed, and posted.

4.13.4.4. Shelter and pad housekeeping are adequate.

4.13.4.5. Airborne half of first stage firing line is shorted out; connected to the P502 Short receptacle on the launcher.

4.13.4.6. All missile stages and the payload is grounded.

4.13.4.7. Safe and arm pins are installed.

4.13.4.8. Showers and eyewashes are operational.

4.13.4.9. Report "Safety Conditions" to CSO at beginning of each countdown task.

#### 4.13.5. Erection. Ensure the following:

4.13.5.1. Hazard area is extended to edge of concrete pad.

4.13.5.2. All personnel within 50 feet of the launcher are wearing hard hats.

#### 4.13.6. Final Systems Checkout. Ensure the following:

4.13.6.1. All nonessential personnel and vehicles are evacuated from the 1200 foot MFCA.

4.13.6.2. Post one MOS guard at the 1200 foot roadblock with instruction for communicating with CSO. Post second (MOS) guard east of the site at a point 1200 feet on Avery Road, (300 feet past Cosmo Road).

---

Figure 4-13. Scout Launch Rehearsal (CST).



4.13.6.3. Post firemen outside the hazard area, near the roadblock after the roadblock guard is posted.

4.13.6.4. After the first stage firing line connection is completed, proceed to the blockhouse with the ordnance crew and security guard. If any access badges are still in his possession resolve this discrepancy with CSO before test proceeds.

4.13.7. Post-test Recovery:

4.13.7.1. Escort safing crew to pad after receiving clearance from CSO. Return security guard to gate house.

4.13.7.2. Monitor ordnance safing activities; ensure the firing line is disconnected from firing lead and connected to P502 Short.

4.13.7.3. Reduce hazard area to edge of pad.

4.13.7.4. Release safety control after missile is lowered and safe or arm lock pins are installed.

Figure 4-13 (continued). Scout Launch Rehearsal (CST).

---

#### 4.14. Scout Launch (CSO).

4.14.1. Additional Equipment and References. None required.

#### 4.14.2. Support:

4.14.2.1. Fire truck and crew on station at beginning of countdown.

4.14.2.2. Two roadblock guards at beginning of Task 5. One will be posted at the normal access control point on Delphy road opposite the blockhouse and the other 1200 feet east of the pad on Avery Road, (300 feet past Cosmo Road).

4.14.2.3. Launch support team on station at T-90.

#### 4.14.3. Safety Control Area:

4.14.3.1. The pad area for H<sub>2</sub>O<sub>2</sub> tanking.

4.14.3.2. The pad area for missile erection.

4.14.3.3. A 1200 foot radius hazard area for first stage firing line connection.

4.14.3.4. A 1200 foot radius danger area after connection is made.

4.14.3.5. MFHA and MFCA.

#### 4.14.4. Action Items. Ensure the following:

4.14.4.1. Firing console arming handle is safe and padlocked and the key is in the possession of the CSO at all times except when otherwise required by the countdown.

4.14.4.2. Communication systems are operational.

4.14.4.3. Status alert light is switched to AMBER after light and communication checks with the MFCO are completed.

4.14.4.4. Visual warning lights are AMBER on the pad and GREEN at the blockhouse.

4.14.4.5. Obtain from CST safety status of the vehicle and pad area before start of each countdown task.

4.14.4.6. Hazard area is cleared of nonessential personnel, to 1200 feet, before first stage firing line connection.

4.14.4.7. Danger area is cleared to 1200 feet before ordnance readout begins.

4.14.4.8. Switch visual warning light to RED and blockhouse light to AMBER after pad is cleared.

---

Figure 4-14. Scout Launch (CSO).

- 4.14.4.9. After LST arrives on station and takes over danger area control, verify security guard is in the blockhouse, the blockhouse is secure, and the LST has fire department crew and both danger area guards.
- 4.14.4.10. Switch blockhouse visual warning light to RED.
- 4.14.4.11. Switch MFHA status and alert light to GREEN after LST Chief verifies clearance complete.
- 4.14.4.12. Join the MFCO net at T-3 minutes.
- 4.14.5. Normal Post-Launch:
- 4.14.6. Unless unusual restrictions exist, allow CST and the post-launch team to proceed to pad.
- 4.14.7. Release safety control after CST verifies that the pad is safe.
- 4.14.8. Abnormal Events:
- 4.14.8.1. The following steps provide action guidelines if the vehicle, or vehicle fragments, impact on land:
- 4.14.8.2. Obtain location of impact from fallback area observers or MFCO and coordinate information with LST Chief.
- 4.14.8.3. Determine hazards involved.
- 4.14.8.4. Ensure status information and appropriate instructions are given to blockhouse personnel.
- 4.14.8.5. Brief LST Chief on blockhouse status.
- 4.14.8.6. Coordinate escape actions when necessary.
- 4.14.9. If there is an inflight failure, delay post-launch safing procedures until the TC gives clearance to proceed.

Figure 4-14 (continued). Scout Launch (CSO).

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#### 4.15. Scout Launch (CST).

4.15.1. Additional Equipment and References. Acid suit, hood, gloves, and boots.

4.15.2. Support:

4.15.2.1. Fire truck and crew on station at beginning of countdown.

4.15.2.2. Two roadblock guards at beginning of Task 5. One will be posted at the normal access control point on Delphy road opposite the blockhouse and the other 1200 feet east of the pad on Avery Road, (300 feet past Cosmo Road).

4.15.3. Safety Control Area:

4.15.3.1. The pad area for  $H_2O_2$  tanking.

4.15.3.2. The pad area for vehicle erection.

4.15.3.3. 1200 foot radius danger area for first stage firing line connection.

4.15.3.4. 1200 foot radius danger area for ordnance readout.

4.15.3.5. MFHA/MFCA.

4.15.4. Action Items. Ensure the following:

4.15.4.1. Communication systems are operational. (Check safety net and roadblock control point communication to CSO).

4.15.4.2. Aural-visual warning lights are operational.

4.15.4.3. Pad is inspected prior to count pick up and status communicated to CSO.

4.15.4.4. Airborne half of first stage firing line is shorted; connected to P502-Short receptacle on the launcher.

4.15.4.5. All missile stages and the payload are properly grounded.

4.15.4.6. Safe and Arm pins are installed.

4.15.4.7. Shower and eyewashes are operational.

4.15.4.8. Support elements are briefed.

4.15.4.9. CSO is given pad, vehicle and support status, before start of each task in the countdown.

4.15.5.  $H_2O_2$  transfer to loading system. Ensure the following:

4.15.5.1. Base Fire Department personnel are standing by and wearing protective clothing.

4.15.5.2. Personnel performing transfer are wearing protective clothing.

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Figure 4-15. Scout Launch (CST).

- 4.15.6. Reaction Control System Fueling. Ensure the following:
- 4.15.6.1. Hazard Area is extended to the edge of the pad.
  - 4.15.6.2. Base Fire Department personnel are briefed, suited, and posted.
  - 4.15.6.3. One fireman wearing an acid suit is stationed at the southeast end of the LSB and one fireman wearing a bunker suit stationed at the fire hydrant. Scott Air Pacs readily available to both men.
  - 4.15.6.4. All exposed personnel, including CST, are wearing acid suits.
- 4.15.7. Booster Erection. Ensure the following:
- 4.15.7.1. Hazard area to edge of the pad.
  - 4.15.7.2. All personnel within 50 feet of the launcher are wearing hard hats.
- 4.15.8. Final System Checkout. Ensure the following:
- 4.15.8.1. All nonessential personnel and vehicles are evacuated from the 1200 foot hazard area.
  - 4.15.8.2. One roadblock guard is posted at access control point roadblock and the second guard on Avery Road 1200 feet east of the launcher. (300 feet past Cosmo Road).
  - 4.15.8.3. Reposition firemen outside the hazard area.
  - 4.15.8.4. After stage I ignition hookup, return to the blockhouse with ordnance crew, security guard and report to CSO.
- 4.15.9. Terminal Count. Ensure the following:
- 4.15.9.1. Blockhouse doors are secure.
  - 4.15.9.2. CSO knows the number of personnel in the blockhouse.
- 4.15.10. Post-launch. Escort safing crew to pad.

Figure 4-15 (continued). Scout Launch (CST).

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4.16. Welding, Burning, or Cutting.

4.16.1. Support. As indicated on the individual MOSR.

4.16.2. Safety Control Area. Hazard area appropriate to the type of operation and system involved in the operation. Hazard rules are followed.

4.16.3. Action Items. Ensure the following:

4.16.3.1. Fire Department has issued a VAN Form 528, "Hazard Operation Work Permit."

4.16.3.2. All flammable solvents, combustible materials, and vehicles are removed from the general area.

4.16.3.3. Propellant lines to tanks are purged with inert gas when required.

4.16.3.4. Molten metal resultant from welding operation is contained in a manner than precludes possible ignition of material or flammables.

4.16.3.5. Qualified welders perform the operation.

4.16.3.6. Fire extinguishing equipment is readily available.

4.16.3.7. Welding will not be permitted in freshly painted area.

4.16.3.8. Welding will not be performed in buildings containing explosives unless permission is first obtained from WSMC/SEM.

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Figure 4-16. Welding, Burning, or Cutting.

<u>OPERATION</u>	<u>CSO</u>	<u>CST*</u>	<u>FIRE</u>	<u>HOSPITAL</u>	<u>GUARDS</u>	<u>LST</u>
Ordinance Electrical C/O	I	I	I	I		
Ordinance Instl. (DPIF)	I	I	I	I		
ACS Press. (1555)	I	I				
Pre Empl Inspection	I	A				
Msl Empl or Removal	I	I	I	I		
ACS Mate Demate	I	I	I	I		
RV Mate Demate	I	I	I	I		
ACS Press. (Pad)	I	I		I		
Safing Pin Instal or Removal	I	I				
Command Destruct Checks	A	A	I	I	A	
R-1 Inspection	I	A		I		
Launch	A	A		I		A
Welding in Silo with Missile Installed	I	A	A			
A = ACTION - The indicated support must be present before the operation may continue.						
I = INFORMATION - The indicated support agency is notified by MOSR but is not required to be present.						
* Either a CSO or CST. In some operations (as indicated) both are required.						

Figure 4-17. Minuteman Support for Hazardous Operations (MM I Programs).

<u>OPERATION</u>	<u>CSO</u>	<u>CST*</u>	<u>FIRE</u>	<u>HOSPITAL</u>	<u>GUARDS</u>	<u>LST</u>
Ordnance Electrical C/O	I	I	I	I		
Ordnance Instl. (DPIF)	I	I	I	I		
PSRE Build up (1555)	I	I	I	I		
PSRE Ord. Inst or Removal (1555)	I	I	I	I		
Pre Empl Inspection	I	A				
Msl Empl or Removal	I	I	I	I		
PSRE Mate Demate Upstage Components	I	I	I	I		
Mate Demate	I	I	I	I		
Safing Pin Install or Removal	I	I				
Command destruct Checks	A	A	I	I	A	
R-1 Inspection	I	A				
Launch	A	A		I	A	A
Welding in Silo with Missile Installed	I	A	A			

A = ACTION - The indicated support must be present before the operation may continue.

I = INFORMATION - The indicated support agency is notified by MOSR, but is not required to be present.

\* Either a CSO or CST. In some operations (as indicated) both are required.

Figure 4-18. Minuteman Support for Hazardous Operations (MM II, III Programs).



<u>OPERATION</u>	<u>CSO</u>	<u>CST*</u>	<u>FIRE</u>	<u>HOSPITAL</u>	<u>GUARDS</u>	<u>LST</u>
Destruct Ord Insp	I	I		I		
EED Insp	I	I		I		
Spin Balance Ops	I	I		I		
Vehicle Ord Escort	I	I	I		A	
Ord Instl Readout	I	A	A	I	A	
Heat Shield Ord Inst R/O	I	A	A	I	A	
Hydrogen Peroxide Trans	I	I	A	I		
Launch Rehearsal	A	A	A	I	A	
R-1 Day Inspection	I	A				
Launch Ops (including H <sub>2</sub> O <sub>2</sub> Fueling)	A	A	A	I	A	A
Defueling H <sub>2</sub> O <sub>2</sub> Reaction Control System	I	A	A	I		

A=ACTION - The indicated support must be present before the operation may continue.

I= INFORMATION - The indicated support agency is notified by MOSR, but is not required to be present.

\* Either a CSO or CST. In some operations (as indicated) both are required.

Figure 4-19. Scout Support for Hazardous Operations.

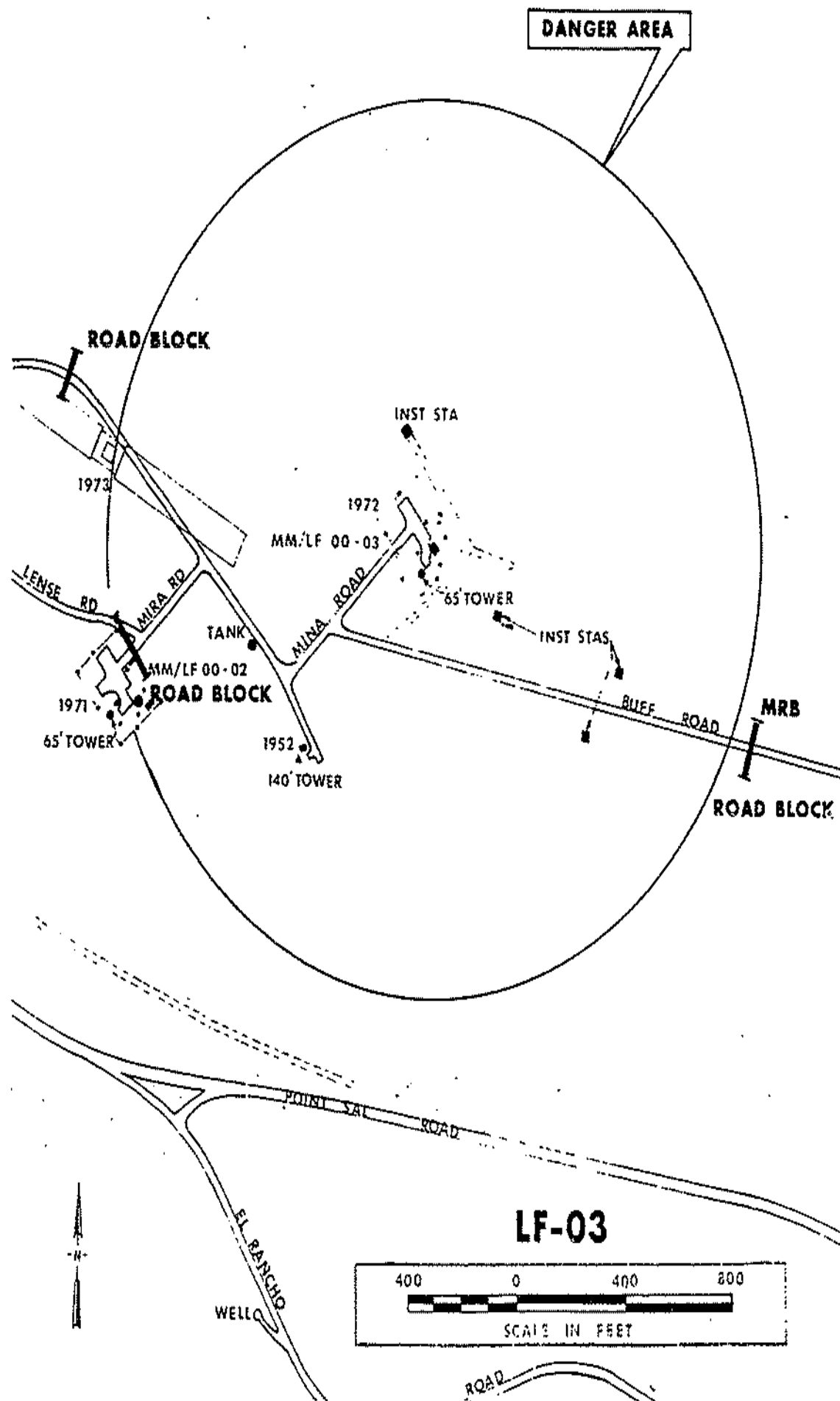


Figure 4-20. LF-03 Area Map

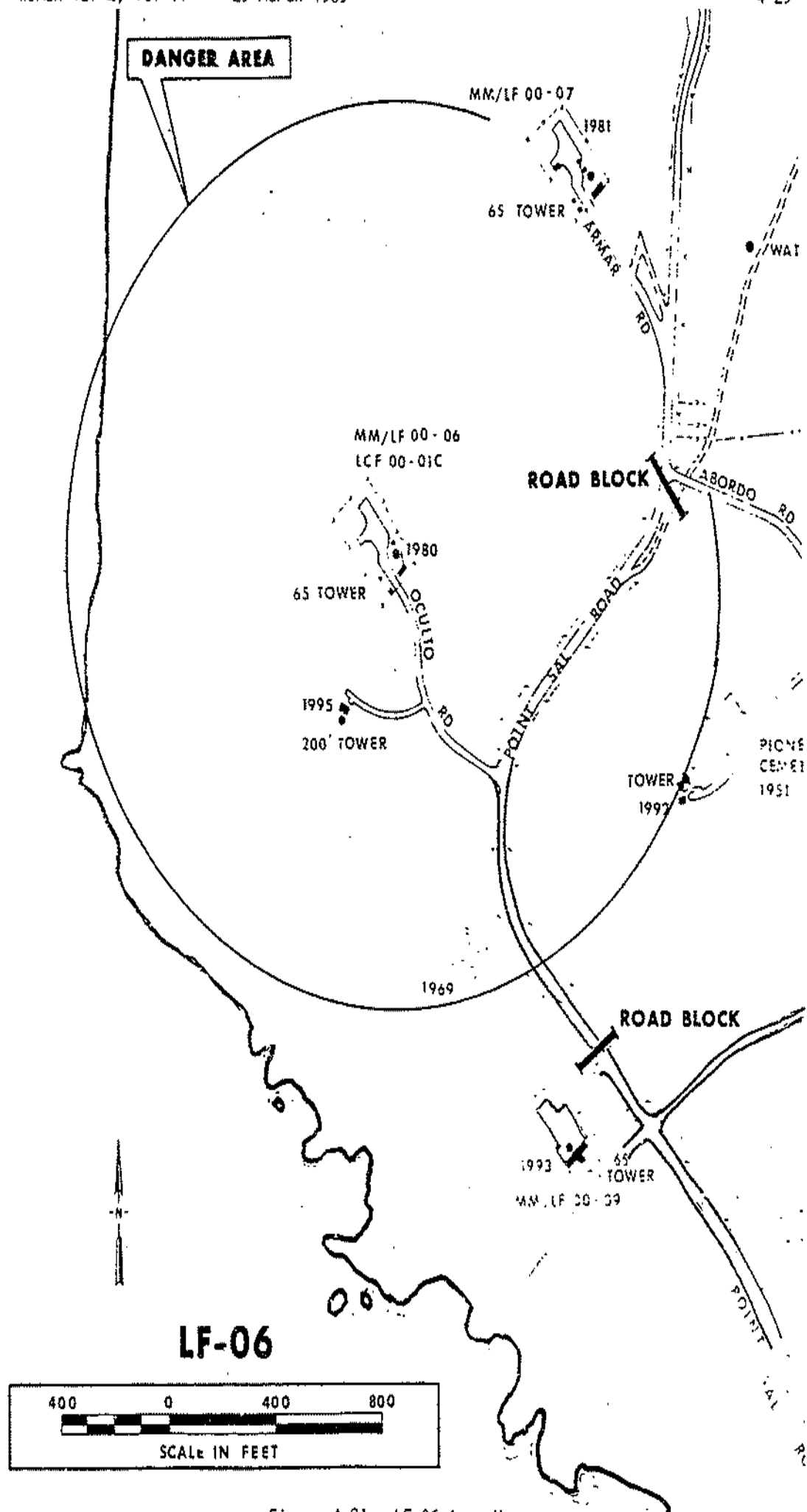


Figure 4-21. LF-06 Area Map



## CHAPTER 5

## PEACEKEEPER SYSTEM

5.1 Peacekeeper System. This chapter contains safety checklists for potentially hazardous operations and special inspections at Peacekeeper processing facilities.

5.2 Peacekeeper Facilities, Terms and Abbreviations. Facilities supporting the Peacekeeper receipt-thru-launch activities and terms and abbreviations used throughout this chapter are:

CRAMAF	Canister Rotating and Missile Assembly Fixture
CSO	Complex Safety Officer
CST	Complex Safety Technician
GOSD	Ground Ordnance Safing Device
HGG	Hot Gas Generator
HPS	Hydraulic Power Supply
ICF	Integrated Checkout Facility (Bldg 1806).
ITF	Integrated Test Facility (Bldg 12000).
LEGG	Launch Eject Gas Generator
LST	Launch Support Team
LSS	Launch Support Stand
MAB	Missile Assembly Building (Bldg 1819).
MMF	Mechanical Maintenance Facility (Bldg 1800).
MOS	Missile Operations Support
MOSR	Missile Operation Support Requirement
PAB	Payload Assembly Building (Bldg 8415).
POV	Privately Owned Vehicle
R-1 Day	Days Before Launch
RS	Reentry System
RTF	Railroad Transfer Facility (Bldg 1886).
SOS	Small Ordnance Storage (Bldg 1815 and 1817)
SPF-A	Stage Processing Facility "A" (Bldg 1824).
SPF-B	Stage Processing Facility "B" (Bldg 1833).
SSF	Stage Storage Facility (Pad Number 8-1333, 8-1830, 8-1834, and 8-1835)
THC	Toxic Hazard Corridor
TP	Test Pad (Bldg 1840)

5.1. Lifting and Transfer of Containerized Peacekeeper Stages I, II, and III.

5.1.1. Additional Equipment. None.

5.1.2. Support. Radio equipped MOS personnel required to establish road blocks for controlled areas. The MOSR will specify the type of stage and facility location at the time it is scheduled.

5.1.3. Safety Control Area. For all nonessential personnel not located within approved facilities. The clearance distance for type I trailer transfers are established as within facility fences at the MAB, SPF-A, SPF-B and the SSP. The distances for the RTF are 250 feet for stage I, 185 feet for stage II and 125 feet for stage III.

5.1.4. Action Items. Ensure the following:

5.1.4.1. Appropriate placards, fire and radiation, are affixed to the container and the appropriate fire symbol is displayed at the facility.

5.1.4.2. The type I trailer is positioned properly and grounded.

5.1.4.3. All flame and spark producing devices are deposited in designated receptacles.

5.1.4.4. No smoking is allowed.

5.1.4.5. AMBER area warning light is activated at all facilities but the RTF and SSP.

5.1.4.6. "Sniff" tests are taken when appropriate.

5.1.4.7. Weather conditions are acceptable.

5.1.4.8. All POVs are removed from the control area.

5.1.4.9. Facility highway doors be closed before initiating lifting action.

---

Figure 5-1. Lifting and Transfer of Containerized Peacekeeper Stages, I, II, and III.

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## 5.2. Peacekeeper Ordnance Installation and Checkout on Stages I, II, III, IV and RS.

5.2.1. Additional Equipment. Nonspark producing clothing and personnel grounding devices.

5.2.2. Support. Not required.

5.2.3. Safety Control Areas. The control areas will be the highbays of the facilities where operations are conducted.

5.2.4. Action Items. Ensure the following:

5.2.4.1. The facility will display the proper fire symbols.

5.2.4.2. The correct area warning light will be activated prior to initiating the hazardous operation and appropriate announcements will be made.

5.2.4.3. Personnel are wearing proper clothing and personnel grounding devices.

5.2.4.4. "No Smoking" rule and spark producing devices are being enforced.

5.2.4.5. Only essential personnel are present during the hazardous procedures.

5.2.4.6. Highbay doors are closed and personnel entry is controlled.

---

Figure 5-2. Peacekeeper Ordnance Installation and Checkout on Stages I, II, III, IV and RS.

---

## 5.3. Processing of the Launch Eject Gas Generator (LEGG) and the Hot Gas Generator (HGG).

5.3.1. Additional Equipment. As required by the procedures.

5.3.2. Support Required. None.

5.3.3. Safety Control Areas. A 75 foot radius in the highbay areas of the MMP.

5.3.4. Action Items. Ensure the following:

5.3.4.1. Correct clothing and personnel grounding devices are being worn by technicians.

5.3.4.2. The correct area warning light is activated prior to the start of the hazardous procedure.

5.3.4.3. Only essential personnel are within the controlled area.

5.3.4.4. The control of smoking and spark producing devices are satisfactory.

5.3.4.5. The correct fire symbol is displayed at the facility.

5.3.4.6. Forklift operations are conducted in a safe manner and spotter is positioned.

---

Figure 5-3. Processing of the Launch Eject Gas Generator (LEGG) and the Hot Gas Generator (HGG).

---

5.4. Missile Assembly or Disassembly at the MAB.

5.4.1. Additional Equipment. According to procedure.

5.4.2. Support. Road blocks manned by radio equipped MOS personnel when mating or demating stage IV and transferring the canisterized missile to the 4509.

5.4.3. Safety Control Area. All lifting operations will require highbay clearance of nonessential personnel with the exception of the task requiring lifting of stage IV over stage III in the canister for the purpose of mating or demating. This task and the transfer of the canisterized missile from the CRAMP to the 4509 transporter will be 3000 feet for nonessential personnel.

5.4.4. Action Items. Ensure the following:

5.4.4.1. The correct fire symbol is displayed at the facility.

5.4.4.2. The correct area warning light is activated before beginning a hazardous procedure.

5.4.4.3. Nonessential personnel are evacuated from the control area.

5.4.4.4. Required announcements are made prior to initiation of hazardous operations and after their completion.

5.4.4.5. Emergency deluge shower and eye washes are operational.

5.4.4.6. Personnel are wearing proper protective equipment.

5.4.4.7. Conflicting operations are not allowed to operate concurrently.

---

Figure 5-4. Missile Assembly or Disassembly at the MAB.



5.5. Missile Systems Checkout at the MAB and Test Pad.

5.5.1. Additional Equipment. As stated in test procedures.

5.5.2. Support. Road blocks manned by radio equipped MOS personnel. WSMC CSO and CST required during portions of this procedure.

5.5.3. Safety Control Area. Nonessential personnel required to evacuate to 3000 feet before the safing team removes the GOSD PIN. After the pin is removed all personnel will evacuate to 3000 feet before missile test begins.

5.5.4. Action Items. Ensure the following:

5.5.4.1. Fire symbol is posted at the facility.

5.5.4.2. The AMBER light is displayed for nonessential personnel evacuation and that the red light is displayed during remote portion of missile test. Proper area warning lights are displayed throughout the procedure.

5.5.4.3. Nonessential personnel are evacuated and all POVs removed from clearance area prior to removal of GOSD pin.

5.5.4.4. Appropriate announcements are made prior to initiation of all hazardous tasks.

5.5.4.5. Security guard takes the safety permit board upon evacuation.

Figure 5-5. Missile Systems Checkout at the MAB and Test Pad.

5.6. Peacekeeper R-1 Day Activities and Inspection.

5.6.1. Additional Equipment. None required.

5.6.2. Support. None required.

5.6.3. Safety Control Area. Not applicable.

5.6.4. Action Items. Ensure the following:

5.6.4.1. Communication systems at test pad are operational.

5.6.4.2. Communications at both fallback areas (30 & 31) are operational.

5.6.4.3. Area warning lights, klaxon, and siren are operational.

5.6.4.4. Deluge shower and eyewash are operational at the test pad.

5.6.4.5. General condition of test pad is secure. No loose items, fire extinguishers, cable, trailers, panels remain on site.

5.6.4.6. No visible hydraulic leaks.

5.6.4.7. All camera and antenna towers are secure.

Figure 5-6. Peacekeeper R-1 Day Activities and Inspection.

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### 5.7. Peacekeeper Reentry System Processing.

5.7.1. Additional Equipment. As stated in test procedures.

5.7.2. Support. None required.

5.7.3. Safety Control Area. Either the PAB highbay or 25 foot radius according to the procedure.

5.7.4. Action Items. Ensure the following:

5.7.4.1. Personnel are wearing appropriate protective equipment.

5.7.4.2. Nonessential personnel are not in the control area.

5.7.4.3. AMBER area warning light is activated before initiation of each hazardous procedure.

5.7.4.4. Appropriate announcements are made prior to initiation of hazardous procedure.

5.7.4.5. No smoking is enforced and spark producing devices are controlled.

5.7.4.6. Wrist stats are being used during ordnance handling.

5.7.4.7. Correct fire symbols are in place.

---

Figure 5-7. Peacekeeper Reentry System Processing.

---

### 5.8. Erection of Canisterized Missile on LSS.

5.8.1. Additional Equipment. M26A-1 cannister mask available at HPS.

5.8.2. Support. Road blocks manned by radio equipped MDS personnel. WSMC CSF and CSO required during portions of this procedure.

5.8.3. Safety Control Area. Nonessential personnel required to evacuate to 3000 feet.

5.8.4. Action Items. Ensure the following:

5.8.4.1. The correct fire symbol is displayed at the facility.

5.8.4.2. The AMBER warning light is activated before beginning the hazardous procedure.

5.8.4.3. Nonessential personnel and POVs are evacuated to 3000 feet.

5.8.4.4. Required announcements are made before initiation of hazardous operations and after their completion.

5.8.4.5. Personnel are wearing correct protective equipment.

---

Figure 5-8. Erection of Canisterized Missile on LSS.

#### 5.9. Peacekeeper Countdown and Launch (CST).

5.9.1. Additional Equipment. Personnel equipment as required, the countdown manual, pad safety checklist, M26Al cannister masks, and ear protection.

5.9.2. Support. LST and MOS guards as scheduled by MOSR.

5.9.3. Safety Control Area. MFCA or MFHA for launch and 3000 feet for missile tests and erection or deerection of the missile.

5.9.4. Action Items. Ensure the following:

5.9.4.1. Communication channels are operational.

5.9.4.2. Area warning lights, sirens, and klaxons are operational.

5.9.4.3. Support personnel are briefed and have correct emergency respiratory equipment (M26Al canister type) and ear protection.

5.9.4.4. Discrepancies found during R-1 day inspection have been corrected.

5.9.4.5. MOS guards with radio-equipped vehicles are ready to support.

5.9.4.6. An ambulance and medical support are on standby at the hospital.

5.9.4.7. POVs are clear of the area.

5.9.5. Malfunction, Hangfire, Abort.

5.9.5.1. Keep CSO advised of status.

5.9.5.2. Report to CSO when test pad is clear for normal operations.

5.9.5.3. Ensure test pad access control is maintained.

5.9.5.4. Advise CSO when test pad is safe.

5.9.6. Normal Post-launch Actions.

5.9.6.1. Keep CSO advised of LST activities.

5.9.6.2. Inform CSO when the LST chief releases control back to normal operations.

5.9.6.3. Report when all areas have been checked and post-launch (VZB-01.3.01) operations are possible.

5.9.6.4. Ensure that proper test pad access is maintained for post-launch procedures.

5.9.6.5. Ensure that personnel reentering the test pad have proper protective equipment.

5.9.6.6. Control of number of personnel and parallel activities must be closely coordinated.

NOTE: Area warning light will remain AMBER until test pad is completely safe for normal operations.

Figure 5-9. Peacekeeper Countdown and Launch (CST).

5.10. Peacekeeper Countdown and Launch (CSO).

- 5.10.1. Additional Equipment. Pad Safety checklist and countdown manual.
- 5.10.2. Support. LST ready to support and ambulance on standby at hospital.
- 5.10.3. Safety Control Area. MFCA and MFHA.

NOTE: CSO must approve troubleshooting procedures, deviations, and emergency actions after final pad clearance.

5.10.4. Action Items. Ensure the following:

- 5.10.4.1. Communication channels are operational.
- 5.10.4.2. Wind information is operational.
- 5.10.4.3. Current THC available.
- 5.10.4.4. Status and alert lights are operational on CSO console.
- 5.10.4.5. Weather conditions are within acceptable parameters.
- 5.10.4.6. Correct support is on station, properly equipped and briefed.
- 5.10.4.7. Area is clear of nonessential personnel and POVs.
- 5.10.4.8. Klaxon and RED lights are activated before remote hazardous operations begin.
- 5.10.4.9. All personnel are clear of the MFHA and only essential personnel are in the MFCA.

5.10.5. Malfunction, Hangfire, Abort:

- 5.10.5.1. Ensure all support is held in position
- 5.10.5.2. Ensure necessary time is taken to evaluate condition.
- 5.10.5.3. Take approved actions to return the test pad to a safe condition.

5.10.6. Abort is Final:

- 5.10.6.1. Ensure that the system and test pad are safe.
  - 5.10.6.2. Clear special task team to the test pad.
  - 5.10.6.3. Receive confirmation from CST that test pad is clear for follow-on operations.
  - 5.10.6.4. Maintain control of access to the test pad.
  - 5.10.6.5. Receive status of test pad from the CST until completely safe.
- 

Figure 5-10. Peacekeeper Countdown and Launch (CSO).

5.11. Post-launch Removal and Transport Cannister.

5.11.1. Additional Equipment. As stated in test procedures.

5.11.2. Support. Contractor guards in position after MOS release (guardhouse positioned at test pad trailer area).

5.11.3. Safety Control Area. Inside of test pad fence.

5.11.4. Action Items. Ensure the following:

5.11.4.1. Area warning lights, siren, and klaxon are operational.

5.11.4.2. Contractor safety engineer is present with required equipment.

5.11.4.3. Personnel involved in initial entry wear acid resistant outer clothing and self-contained breathing apparatus.

5.11.4.4. Personnel involved in removal of debris wear overalls and chemical resistant gloves for protection against acidic residue.

Figure 5-11. Post-launch Removal and Transport Cannister.

<u>OPERATION</u>	<u>CSO</u>	<u>CST</u>	<u>FIRE</u>	<u>HOSPITAL</u>	<u>MOS</u>	<u>LST</u>
Type I Transfer	I	I	I	I	*A	
Ordnance Connect	I	I	I	I		
Stage IV Checkout	I	I	I	I		
LEGG/HGG Processing	I	I	I	I		
Missile Assembly/disassembly	I	**A	I	I	**A	
Canisterized Missile Preparation for Transport	I	A	I	I	A	
Missile System Checkout	A	A	I	I	A	
R-1 Day Inspections	I	A				
X-Ray	I	I		A		
Welding	I	I	A			
RS Processing	I	I	I	I		
Erection/Deerection	A	A	I	I	A	
Launch	A	A	A	A	A	A
Post-launch	I	A	***A	***A	***A	

\* - Only when transferring at RTF

\*\* - Only when mating Stage IV to Stage III

\*\*\* - For initial portion of operation

A - Action. This support must be present before operation can begin or continue.

I - Information. The support agency is notified by MOSR but is not required to be present.

Figure 5-12. Peacekeeper Support Required for Hazardous Operations.

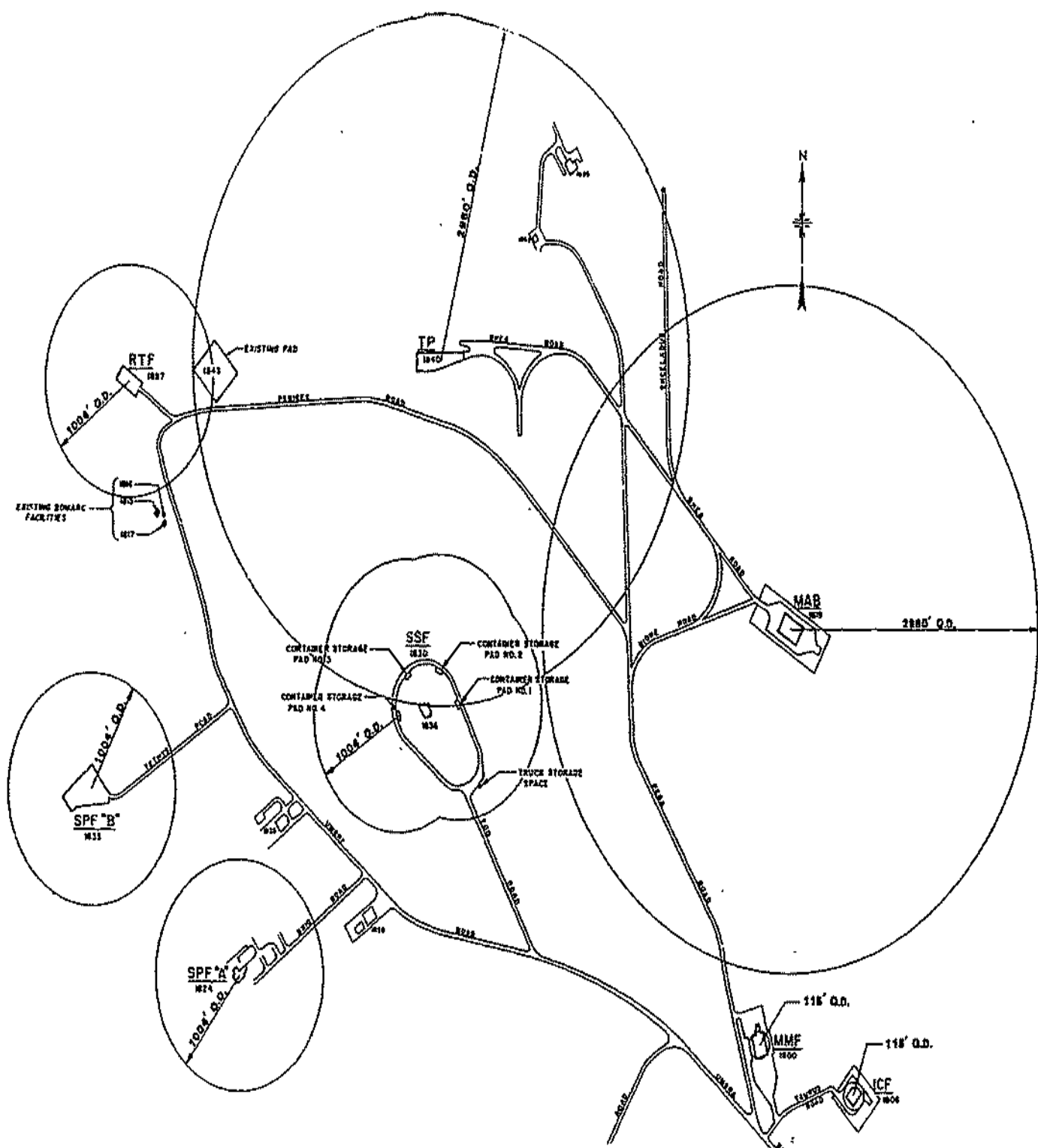


Figure 5-13. Peacemaker Area Map

5-12

WSMCR 127-2, Vol II 29 March 1985

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SUMMARY OF CHANGES

This revision updates safety checklists for hazardous and dangerous missile operations; chapter 5 has been added for the Peacekeeper program; a glossary for terms and abbreviations used in this regulation; and checklist provisions have been revised to reflect changes in the hardware or changes in the support required.